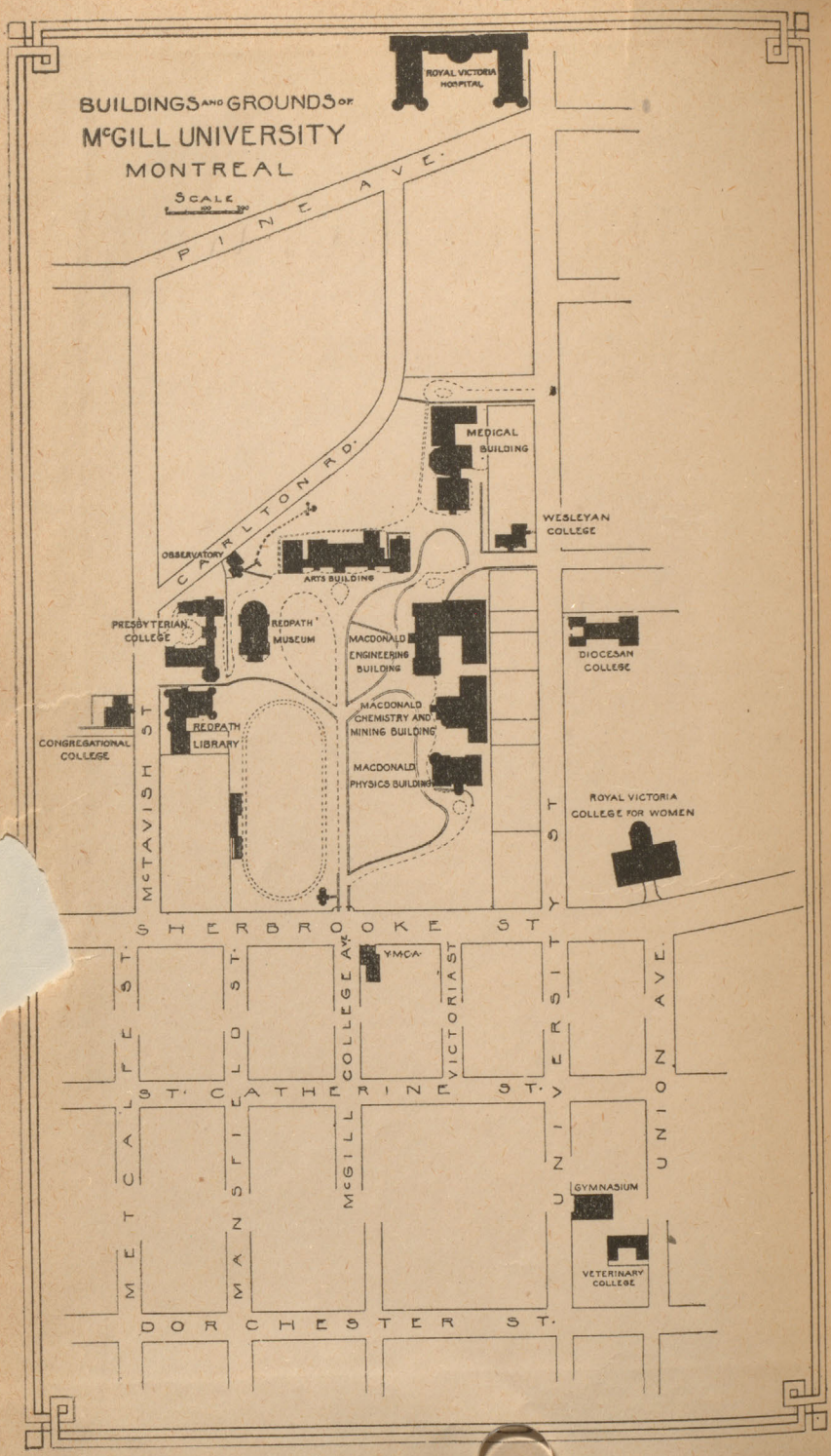
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SESSION 1899—1900

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JAMES W. FRASER, B.Sc. *Demonstrator in Physics.*	McGill College.
R. K. McCLUNG, B.A. *Demonstrator in Physics.*	McGill College.
E. J. SEMPLE, B.A. (St. Mary's College), M.D. *Demonstrator of Surgical Pathology.*	375 St Antoine Street.
H. M. CHURCH, M.D. *Demonstrator of Anatomy.*	354 Greene Av.
W. G. REILLY, M.D. *Demonstrator of Anatomy.*	51 Park Av.
R. A. WESTLEY, M.D. *Demonstrator of Anatomy.*	85 Union Av.
D. D. McTAGGART, B.A.Sc., M.D. *Assistant Demonstrator of Pathology.*	90 Park Av.
S. RIDLEY MACKENZIE, M.D. *Assistant Demonstrator of Medicine.*	144 Peel Street.
D. P. ANDERSON, B.A., M.D. *Assistant Demonstrator of Pathology.*	493E St. Urbain Street.
T. P. SHAW, M.D. *Assistant Demonstrator of Obstetrics.*	1260 Dorchester Street.
JAMES BARCLAY, M.D. *Assistant Demonstrator of Obstetrics.*	McGill Medical College.
J. A. WILLIAMS, M.D. *Assistant Demonstrator of Bacteriology.*	365 St Antoine Street.
A. T. BAZIN, M.D. *Assistant Demonstrator of Anatomy.*	46 Richmond Square.

LIBRARY.

CHAS. H. GOULD, B.A. *University Librarian.*	862 Sherbrooke Street.
H. MOTT. *Assistant Librarian.*	17 St. Famille Street.

General Statement.

SESSION OF 1899-1900.

The Sixty-seventh Session of the University, being the Forty-seventh under the amended Charter, will commence in the autumn of 1899.

By Virtue of the Royal Charter, granted in 1821 and amended in 1852, the Governors, Principal and Fellows of McGill College constitute the Corporation of the University; and, under the Statutes framed by the Board of Governors with the approval of the Visitor, have the power of granting Degrees in all the Arts and Faculties in McGill College and Colleges affiliated thereto.

The Statutes and Regulations of the University have been framed on the most liberal principles, with the view of affording to all classes of persons the greatest possible facilities for the attainment of mental culture and professional training. In its religious character the University is Protestant, but not denominational, and while all possible attention will be given to the character and conduct of Students, no interference with their individual views will be sanctioned.

The educational work of the University is carried on in McGill College, Montreal, and in the Affiliated Colleges and Schools.

I. McGILL COLLEGE.

THE FACULTY OF ARTS.—The courses of study extend over four Sessions of eight months each. In the third and fourth years extensive options and certain exemptions are allowed to professional students. The course of study leads to the Degrees of B.A., M.A., B.Sc., M.Sc., D.Sc., and D. Litt. The Degree of B.A. from this University admits the holder to the study of the learned professions without preliminary examination, in the Provinces of Quebec and Ontario, and in Great Britain and Ireland, etc.

The degree of B.A. or B.Sc. can be obtained along with the degree in the Faculty of Medicine or of Applied Science in six years, or of Law in five years. This is effected by avoiding the duplication of courses in the same subjects or in those which give the same educational training, and by a proper adaptation of the time tables. A certificate of Literate in Arts will be given along with the degree in either Faculty to candidates who have completed two years in Arts before entering the Professional Faculty.

THE COURSE IN ARTS (Royal Victoria College) provides for the education of women, in separate classes, with course of study, exemptions, degrees and honours identical with those for men.

THE FACULTY OF APPLIED SCIENCE provides a thorough professional training, extending over four years, in Civil Engineering, Mechanical Engineering, Mining Engineering and Assaying, Electrical Engineering, Practical Chemistry, and Architecture, leading to the Degrees of B Sc., M.Sc., and D.Sc.

THE FACULTY OF LAW.—The complete course of law extends over three Sessions of eight months each, and leads to the Degrees of B.C.L. and D.C.L.

THE FACULTY OF MEDICINE.—The complete course of study in Medicine extends over four Sessions of nine months each, and leads to the Degree of M.D., C.M.

THE FACULTY OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE.—The complete course extends over three Sessions of six months each, and leads to the Degree of D.V.S.

The Complete Calendar with information respecting all the Faculties, etc., may be obtained from W. Vaughan, Esq., Registrar of the University.

II. AFFILIATED COLLEGES.

Students of Affiliated Colleges are matriculated in the University, and may pursue their course of study in the Affiliated College, or in part in the Affiliated College and in part in McGill College, as the case may be, and may come up to the University Examinations on the same terms as the students of McGill College.

MORRIN COLLEGE, QUEBEC.—Is affiliated in so far as regards Degrees in Arts and Law. [Detailed information may be obtained from the REV. DONALD MACRAE, D.D., Principal.]

THE STANSTEAD WESLEYAN COLLEGE, STANSTEAD, P.Q.—Is affiliated in so far as regards the Intermediate Examination in Arts. [Detailed information may be obtained from the Rev. C. R. FLANDERS, B.A., D.D., Principal.]

VANCOUVER COLLEGE, Vancouver, B. C.—Is affiliated in so far as regards the work of the First Year in Arts. [Detailed information may be obtained from A. ROBINSON, B.A., Principal.]

III. AFFILIATED THEOLOGICAL COLLEGES.

Affiliated Theological Colleges have the right of obtaining for their students the advantage, in whole or in part, of the course of study in Arts, with such facilities in regard to exemptions as may be agreed on.

THE CONGREGATIONAL COLLEGE OF CANADA, MONTREAL. Principal, REV. J. HENRY GEORGE, D.D., PH.D., 58 McTavish St.

THE PRESBYTERIAN COLLEGE, MONTREAL, in connection with the Presbyterian Church in Canada. Principal, REV. D. H. MACVICAR, D.D., LL.D., 69 McTavish St.

THE DIOCESAN COLLEGE OF MONTREAL. Principal, Rev. Henry M. Hackett, M.A., B.D., 201 University St.

THE WESLEYAN COLLEGE OF MONTREAL. Principal, REV. W. I. SHAW, M.A., LL.D., 228 University St.

[Calendars of the above Colleges and all necessary information may be obtained on application to their Principals.]

IV. McGILL NORMAL SCHOOL.

THE McGILL NORMAL SCHOOL provides the training requisite for Teachers of Elementary and Model Schools and Academies. Teachers trained in this School are entitled to Provincial Diplomas, and may, on conditions stated in the announcement of the School, enter the classes in the Faculty of Arts for Academy Diplomas and for the Degree of B.A. Principal, S. P. ROBINS, LL.D., 32 Belmont St., Montreal, from whom copies of the School announcement may be obtained.

V. AFFILIATED HIGH SCHOOLS, ETC.

The Trafalgar Institute for the higher education of women, Simpson St., Montreal, Principal, Miss Grace Fairley. The High School of Montreal, and The Girls' High School of Montreal, Metcalfe St., Principal, Rev. Elson I. Rexford, B.A.

Schools which have prepared successful candidates for A.A. or for matriculation (June, 1899).

High School, Montreal; Girls' H. S., Montreal; Abingdon School, Montreal; Montreal Coll. Inst.; Miss Symmers' and Miss Smith's School, Montreal; Westmount Acad; Bishop's Coll. School, Lennoxville; Compton Ladies' Coll.; Cookshire Acad.; Danville Acad.; Dufferin Gram. School; Feller Inst.; Gault Inst., Valleyfield; Granby Acad.; Guelph Coll. Inst.; Larrison Coll.; Huntingdon Acad.; Inverness Acad.; College of Regiopolis, Kingston; Knowlton Acad.; Lachute Acad.; Lennoxville Mod. School; Magog Mod. School; Mansonville Mod. School; Merchiston Castle School, Edin.; New Westminster H. S.; Ormstown Acad.; Ottawa Coll. Inst.; Paspebiac Mod. School; Pembroke H. S.; Boys' H. S., Quebec; Renfrew H. S.; Ridley Coll., St. Catharines; Church School for Boys, Rothesay, N.B.; Rothesay School for Girls, St. John, N.B.; Sherbrooke Acad.; Stanstead Wesleyan Coll.; Sutton Acad.; St. Albans School, Berthier; St. Bonaventure Coll., St. John's, Nfld.; St. Louis Coll., New Westminster, B.C.; St. Francis Coll. School; High School, St. John, N.B.; St. John's H. S.; Upper Canada Coll.; Vancouver Coll., Vancouver, B.C.; Coll. School, Victoria, B.C.; Waterloo Acad.; Williamstown H. S.

SEPTEMBER, 1899.

1	Friday	Normal School opens.
2	Saturday	Meeting of Medical Faculty.
3	SUNDAY	
4	Monday	Meeting of Faculty of Applied Science.
5	Tuesday	Matriculation in Law. Introductory Lecture in Law.
6	Wednesday	Lectures in Law begin.
7	Thursday	
8	Friday	
9	Saturday	
10	SUNDAY	
11	Monday	
12	Tuesday	Register opens for students in Medicine. College Grounds Committee.
13	Wednesday	Meeting of Faculty of Arts.
14	Thursday	Matriculation, Exhibition, Scholarship and Supplemental Examinations. Finance Committee.
15	Friday	Examinations continued.
16	Saturday	Matriculation in Veterinary Science.
17	SUNDAY	
18	Monday	Examinations continued. Engineering Building Committee; Chemistry and Mining Building Committee.
19	Tuesday	Examinations continued. Introductory Lecture in Medicine.
20	Wednesday	Examinations continued. Introductory Lecture in Veterinary Science. Lectures in Applied Science begin.
21	Thursday	Lectures in Arts, Medicine and Veterinary Science begin. Summer Essays in Applied Science to be sent in.
22	Friday	Meeting of Faculty of Arts.
23	Saturday	Meeting of Governors.
24	SUNDAY	
25	Monday	
26	Tuesday	
27	Wednesday	
28	Thursday	
29	Friday	
30	Saturday	

OCTOBER, 1899.

1	SUNDAY	
2	Monday	Meeting of Faculty of Applied Science.
3	Tuesday	
4	Wednesday	Normal School Committee.
5	Thursday	Founder's Birthday. Physics Building Committee.
6	Friday	The William Molson Hall opened, 1862. Meeting of Faculty of Arts.
7	Saturday	Meeting of Medical Faculty. Supplemental Examinations, Applied Science.
8	SUNDAY	
9	Monday	Museum Committee: Library Committee.
10	Tuesday	College Grounds Committee.
11	Wednesday	Regular Meeting of Corporation. Annual Report to Visitor.
12	Thursday	Finance Committee.
13	Friday	University Athletic Sports.
14	Saturday	
15	SUNDAY	
16	Monday	Engineering Building Committee: Chemistry and Mining Building Committee
17	Tuesday	
18	Wednesday	
19	Thursday	
20	Friday	Meeting of Faculty of Arts.
21	Saturday	Register closes for Students in Medicine.
22	SUNDAY	
23	Monday	
24	Tuesday	
25	Wednesday	
26	Thursday	
27	Friday	
28	Saturday	Meeting of Governors.
29	SUNDAY	
30	Monday	
31	Tuesday	New Library opened, 1893

NB.—Meetings of the Faculty of Arts are held at 4 30 P.M. unless otherwise specified.

NOVEMBER, 1899.

1 Wednesday	
2 Thursday	
3 Friday	Meeting of Faculty of Arts.
4 Saturday	Meeting of Medical Faculty.
5 SUNDAY	
6 Monday	Meeting of Faculty of Applied Science.
7 Tuesday	
8 Wednesday	
9 Thursday	Finance Committee.
10 Friday	
11 Saturday	
12 SUNDAY	
13 Monday	
14 Tuesday	College Grounds Committee.
15 Wednesday	
16 Thursday	
17 Friday	Meeting of Faculty of Arts.
18 Saturday	
19 SUNDAY	
20 Monday	Engineering Building Committee: Chemistry and Mining Building Committee.
21 Tuesday	
22 Wednesday	
23 Thursday	
24 Friday	
25 Saturday	Meeting of Governors.
26 SUNDAY	
27 Monday	
28 Tuesday	
29 Wednesday	
30 Thursday	

DECEMBER, 1899.

1 Friday	Meeting of Faculty of Arts.
2 Saturday	Meeting of Medical Faculty.
3 SUNDAY	
4 Monday	Meeting of Faculty of Applied Science.
5 Tuesday	
6 Wednesday	
7 Thursday	Physics Building Committee.
8 Friday	
9 Saturday	
10 SUNDAY	
11 Monday	Sessional Examinations in Medicine begin. Museum Committee: Library Committee.
12 Tuesday	College Grounds Committee.
13 Wednesday	Regular Meeting of Corporation. Last day of Lectures in Arts.
14 Thursday	Finance Committee.
15 Friday	Christmas Examinations in Arts begin.
16 Saturday	
17 SUNDAY	
18 Monday	Engineering Building Committee: Chemistry and Mining Building Committee.
19 Tuesday	
20 Wednesday	
21 Thursday	Autumn term of Faculty of Medicine ends.
22 Friday	Christmas Vacation begins.
23 Saturday	Meeting of Governors.
24 SUNDAY	
25 Monday	Christmas-Day.
26 Tuesday	
27 Wednesday	
28 Thursday	
29 Friday	
30 Saturday	
31 SUNDAY	

1 Monday
2 Tuesday
3 Wednesday
4 Thursday
5 Friday — Lectures in Arts and Applied Science resumed. Meeting of Faculty of Arts.
6 Saturday — Meeting of Medical Faculty.

7 SUNDAY

8 Monday — Winter term Faculty of Medicine begins. Lectures in Law resumed. Meeting of Faculty of Applied Science.
9 Tuesday — College Grounds Committee.
10 Wednesday — Normal School Committee.
11 Thursday — Finance Committee.
12 Friday — Meeting of Faculty of Arts.
13 Saturday

14 SUNDAY

15 Monday — Engineering Building Committee: Chemistry and Mining Building Committee.
16 Tuesday
17 Wednesday
18 Thursday
19 Friday
20 Saturday

21 SUNDAY

22 Monday
23 Tuesday
24 Wednesday
25 Thursday
26 Friday — Meeting of Faculty of Arts.
27 Saturday — Meeting of Governors.

28 SUNDAY

29 Monday
30 Tuesday
31 Wednesday — Theses for M.A. and LL.D. to be sent in.

FEBRUARY, 1900.

1 Thursday
2 Friday
3 Saturday — Meeting of Medical Faculty.

4 SUNDAY

5 Monday — Meeting of Faculty of Applied Science.
6 Tuesday
7 Wednesday
8 Thursday — Finance Committee: Physics Building Committee.
9 Friday — Meeting of Faculty of Arts.
10 Saturday

11 SUNDAY

12 Monday — Museum Committee: Library Committee.
13 Tuesday — College Grounds Committee.
14 Wednesday — Regular Meeting of Corporation
15 Thursday
16 Friday
17 Saturday

18 SUNDAY

19 Monday — Engineering Building Committee: Chemistry and Mining Building Committee.
20 Tuesday
21 Wednesday
22 Thursday
23 Friday — Meeting of Faculty of Arts.
24 Saturday — Meeting of Governors. Physics and Engineering Buildings opened Feb. 25th, 1893.

25 SUNDAY

26 Monday
27 Tuesday
28 Wednesday — No Lectures.

MARCH, 1900.

1 Thursday	
2 Friday	
3 Saturday	Meeting of Medical Faculty.
4 SUNDAY	
5 Monday	Meeting of Faculty of Applied Science.
6 Tuesday	
7 Wednesday	
8 Thursday	Finance Committee.
9 Friday	Meeting of Faculty of Arts.
10 Saturday	
11 SUNDAY	
12 Monday	
13 Tuesday	College Grounds Committee.
14 Wednesday	
15 Thursday	
16 Friday	
17 Saturday	
18 SUNDAY	
19 Monday	Engineering Building Committee: Chemistry and Mining Building Committee.
20 Tuesday	
21 Wednesday	
22 Thursday	
23 Friday	Meeting of Faculty of Arts. Reports of Attendance on Lectures. Winter term ends Faculty of Medicine.
24 Saturday	Meeting of Governors.
25 SUNDAY	
26 Monday	
27 Tuesday	
28 Wednesday	
29 Thursday	
30 Friday	Last day of Lectures in Arts and Applied Science. Convocation for Degrees in Veterinary Science.
31 Saturday	

APRIL, 1900.

1 SUNDAY	
2 Monday	Examinations in Arts. Meeting of Faculty of Applied Science.
3 Tuesday	
4 Wednesday	Normal School Committee.
5 Thursday	Physics Building Committee.
6 Friday	
7 Saturday	Meeting of Medical Faculty.
8 SUNDAY	
9 Monday	Spring term begins Faculty of Medicine. Museum Committee: Library Committee.
10 Tuesday	College Grounds Committee.
11 Wednesday	Regular meeting of Corporation.
12 Thursday	Finance Committee.
13 Friday	Good Friday. Easter vacation begins.
14 Saturday	
15 SUNDAY	Easter Sunday.
16 Monday	Engineering Building Committee: Chemistry and Mining Building Committee.
17 Tuesday	Easter vacation ends.
18 Wednesday	
19 Thursday	
20 Friday	
21 Saturday	
22 SUNDAY	
23 Monday	
24 Tuesday	
25 Wednesday	
26 Thursday	
27 Friday	
28 Saturday	Meeting of Governors.
29 SUNDAY	
30 Monday	Convocation for Degrees in Arts, Law and Applied Science.

1 Tuesday	Post Graduate Course in Medicine begins. Meeting of Examiners for School Examinations.
2 Wednesday	
3 Thursday	
4 Friday	
5 Saturday	Meeting of Medical Faculty.
6 SUNDAY	
7 Monday	Meeting of Faculty of Applied Science.
8 Tuesday	College Grounds Committee.
9 Wednesday	
10 Thursday	Finance Committee.
11 Friday	
12 Saturday	
13 SUNDAY	
14 Monday	
15 Tuesday	
16 Wednesday	
17 Thursday	
18 Friday	
19 Saturday	
20 SUNDAY	
21 Monday	Engineering Building Committee: Chemistry and Mining Building Committee.
22 Tuesday	
23 Wednesday	
24 Thursday	Queen's Birthday.
25 Friday	Lectures end Faculty of Medicine.
26 Saturday	Meeting of Governors.
27 SUNDAY	
28 Monday	Examinations begin Faculty of Medicine.
29 Tuesday	
30 Wednesday	
31 Thursday	Normal School closes.

JUNE, 1900.

1 Friday	
2 Saturday	Meeting of Medical Faculty.
3 SUNDAY	Whit Sunday.
4 Monday	
5 Tuesday	
6 Wednesday	Normal School Committee.
7 Thursday	Physics Building Committee.
8 Friday	
9 Saturday	
10 SUNDAY	Trinity Sunday.
11 Monday	Examinations begin for Matriculation and Associate in Arts. Museum Committee: Library Committee.
12 Tuesday	College Grounds Committee.
13 Wednesday	Regular Meeting of Corporation.
14 Thursday	Finance Committee.
15 Friday	Spring Term ends Faculty of Medicine. Convocation for degrees in Medicine.
16 Saturday	
17 SUNDAY	
18 Monday	Engineering Building Committee: Chemistry and Mining Building Committee.
19 Tuesday	
20 Wednesday	
21 Thursday	
22 Friday	
23 Saturday	Meeting of Governors.
24 SUNDAY	
25 Monday	
26 Tuesday	
27 Wednesday.	
28 Thursday	
29 Friday	
30 Saturday	

1 SUNDAY	
2 Monday	
3 Tuesday	
4 Wednesday	
5 Thursday	
6 Friday	
7 Saturday	Meeting of Medical Faculty.
8 SUNDAY	
9 Monday	
10 Tuesday	
11 Wednesday	
12 Thursday	
13 Friday	
14 Saturday	
15 SUNDAY	
16 Monday	
17 Tuesday	
18 Wednesday	
19 Thursday	
20 Friday	
21 Saturday	
22 SUNDAY	
23 Monday	
24 Tuesday	
25 Wednesday	
26 Thursday	
27 Friday	
28 Saturday	
29 SUNDAY	
30 Monday	
31 Tuesday	

AUGUST, 1900.

1 Wednesday	
2 Thursday	
3 Friday	
4 Saturday	
5 SUNDAY	
6 Monday	
7 Tuesday	
8 Wednesday	
9 Thursday	
10 Friday	
11 Saturday	
12 SUNDAY	
13 Monday	
14 Tuesday	
15 Wednesday	
16 Thursday	
17 Friday	
18 Saturday	
19 SUNDAY	
20 Monday	
21 Tuesday	
22 Wednesday	
23 Thursday	
24 Friday	Peter Redpath Museum opened 1882.
25 Saturday	
26 SUNDAY	
27 Monday	
28 Tuesday	
29 Wednesday	
30 Thursday	
31 Friday	

FACULTY OF ARTS.

ENTRANCE, EXHIBITION, SCHOLARSHIP, AND SUPPLEMENTAL EXAMINATIONS, SEPTEMBER, 1899.

Date.	First Year		Second Year.		Third Year.	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
14 Thurs.	Latin.	Latin.	Latin.	Latin.	Latin.	Latin.
14 Thurs.					Mathematics.	
15 Fri.	Geometry.	Algebra and Trigonometry.	Mathematics.	Mathematics	Mathematics.	Greek.
					Chemistry.	Chemistry.
18 Mon.	English.	English.	English.	Logic.	English. Logic.	English. Chemistry.
19 Tues.	French.	German.	French.	German. Greek.	Mathematics. Botany French.	English Composition.
20 Wed.	Physics, etc.		Mathematics.	English.	Mathematics.	German.
21 Thurs.	Greek.	Greek.	Greek.		Greek.	

FACULTY OF ARTS.

*CHRISTMAS EXAMINATIONS, DECEMBER, 1899.**

Day.	Date	First Year.	Second Year.	Third Year.	Fourth Year.
Friday.	15	Latin.	Latin.	Mechanics.	Astronomy.
"	15		M'matics, P.M.	German.	German.
Monday.	18	Greek.	Greek.	Greek.	Greek.
"	18			Zoology, P.M.	Latin, P.M.
Tuesday.	19	Mathematics.	Psychology.	Latin.	Moral Philosophy.
"	19	French, P.M.	French, P.M.	Ment. Phil., P.M.	Geology, P.M.
Wednesday.	20	Physics.	Chemistry.	Botany.	
"	20	German, P.M.	German, P.M.	French.	French.
"	20		Hebrew, P.M.		
Thursday.	21	English.	English.		

* The Christmas Examinations are obligatory on all Students, and the standing gained herein may be taken into account by the Faculty at the close of the session.

FACULTY OF ARTS.

SESSIONAL AND HONOUR EXAMINATIONS, APRIL, 1900.

DATE.	FIRST YEAR.	SECOND YEAR.	THIRD YEAR.	FOURTH YEAR.
APRIL.	A.M. P.M.	A.M. P.M.	A.M. P.M.	A.M. P.M.
2 Mon.	Hebrew.....	Hebrew.....	Hebrew.....	Hebrew and B.A. Honours.
3 Tues.	Greek.....Greek.	Greek..... Greek.	Mechanics	Ethics.....Ethics.
4 Wed.	Latin.....Latin.	Latin.....Latin.	Latin.....Latin.	Latin.....Latin.
5 Thurs.	English.....English.	Mod. Hist.....	Ex. Phy- English sics.	Ex. Phy- English. sics.
6 Fri.	.....	.....	Botany...	Botany. English
9 Mon.	Geometry and Arithmetic....	Mathematics.....	Greek. .....Greek	Mechanics and B.A. Honours. French.
10 Tues.	Trigonometry and Algebra.....	Mathematics...	Astronomy and .... Optics ..French.	Astr'y. and Optics. B.A. Honours. German.
11 Wed.	French. .....French.	French.....French.	Metaphysics..... German	Geology...Geology.
12 Thurs.	German.....German.	German. German.	Zoology.....	Greek.... Greek.
13 Fri.	Good Friday. Easter	Vacation begins.		
14 Sat.	.....	.....	.....	....
15 Sun.	Easter Sunday.			
16 Mon.	.....	.....	.....	.....
17 Tues.	Physics.	Logic.....	French...German.	French....German B.A. Honours.
18 Wed.	Advanced Sections	Advanced Sections	Honour Exam'tions	B.A. Honours.
19 Thurs.	Advanced Sections	Advanced Sections	Honour Exam'tions	B. A. Honours.
20 Fri.	Advanced Sections	Advanced Sections	Honour Exam'tions	B. A. Honours.
21 Sat.	Meeting of Examiner	ers and Faculty at	9.30 A.M.	
23 Mon.	Meeting of Examiner	s and Faculty at 9.30	A.M.	
24 Tues.	Declaration of result	s.		
25 Wed.	Meeting of Corporatio	n.		
30 Mon.	Convocation for Degr	ees in Arts.		

SESSIONAL EXAMINATIONS, APRIL, 1900.

DATE.	FIRST YEAR.	SECOND YEAR.	THIRD YEAR.	FOURTH YEAR.
MARCH.				
31 Sat.	.....	.....	Municip. Eng., (Sanitary.)	Municip. Eng. (Sanitary.) Geology.
APRIL.				
1 Sun.	.....	.....	.....	.....
2 Mon.	Desc. Geom., a.m.	Desc. Geom.	Theory of Structures	Chemistry. Theory of Struct.
3 Tues.	Mathematics.	Chemistry.	Chemistry. Elect. Eng.	Assaying. Dyn. of Machin'y
4 Wed.	.....	Chemistry.	Theory of Structures	Chemistry. Elect. Engin. Theory of Struct.
5 Thurs.	English	Exp. Physics.	Exp. Physics.	Elect. Engin. Geodesy. Mechl. Eng.
6 Fri.	Math. Lab.	.....	Desc. Geom.	Geology (Adv.).
7 Sat.	.....	Surveying.	.....	Ore Dressing and Metallurgy.
8 Sun.	.....	.....	.....	.....
9 Mon.	Pract. Chem. (1)	Kinematics.	Surveying.	Mining. Mechl. Eng. Lab.
10 Tues.	Mathematics.	Mathematics.	Machine Design. Org. Chemistry.	Hydraulics. a.m. and p.m. Org. Chemistry.
11 Wed.	Desc. Mechanism.	Mining. Elem. of Archt. a.m. and p.m.	Metallurgy, Copper, a.m. Iron & Steel, p.m.	Geology.
12 Thurs.	Pract. Chem. (2)	Hist. of Archt a.m. and p.m.	Hist. of Archt. a.m. and p.m. Dyn. of Mach. Geology.	Machine Design. Th. of Struct.
13 Fri.	Good Friday.....	.....	.....	.....
14 Sat.	Pract. Chem. (3)	.....	Mining. Thermodynamics.	Thermodynamics.
15 Sun.	Easter Sunday.....	.....	.....	.....
16 Mon.	Chemistry.	Mechl. Drawing.	Mechl. Drawing. Phys. Lab. Wk., (Elect. Eng.)	Phys. Lab. Wk. p.m.
17 Tues.	Mathematics.	.....	Railway Engin.	Chemistry. Geology. Railway Eng.
18 Wed.	.....	Mathematics.	Mathematics.	Art History. Mechl. Designing. Muncip. Eng.
19 Thurs.	.....	.....	Mineralogy (Adv.).	Geology. Hydraulic Machy.
20 Fri.	.....	.....	.....	Hist. of Archt.
21 Sat.	.....	.....	Mineralogy (Adv.).	.....
22 Sun.	.....	.....	.....	.....
23 Mon.	.....	.....	.....	.....
24 Tues.	.....	.....	.....	.....
25 Wed.	.....	.....	.....	.....
26 Thurs.	.....	.....	.....	.....
27 Fri.	.....	.....	.....	.....
28 Sat.	.....	.....	.....	.....
29 Sun.	.....	.....	.....	.....
30 Mon.	Convocation.....	.....	.....	.....

N.B.—The Examinations begin at 9.00 a.m. and 2.00 p.m. when not otherwise specified



Arts Building.

FACULTY OF ARTS.

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Faculty of Arts.

Part First.

The next session of this Faculty will begin on September 14th, 1899, and will extend to April 30th, 1900.

General Information.

The B. A. and B. Sc. Courses extend over four sessions.

The session lasts from the middle of September to May 1st, with a fortnight's vacation at Christmas.

Examinations for Entrance are held in June and September.

Attendance on lectures is obligatory on all Students.

Examinations on the subjects of the course are held in December and April.

Exhibitions open to undergraduates, proceeding to the degree of B.A., and tenable for one year, are offered for competition in September, to the First and Second years. They vary in value from $50 to $125. The Exhibition examinations may be taken as Entrance Examinations.

Scholarships, open to undergraduates proceeding to the degree of B.A., and tenable for two years, are offered for competition, in September, to Students of the Third Year.

Gold Medals, Honours and Prizes are awarded for advanced courses of study.

The fee for Undergraduates is $60 per session, inclusive of all Laboratory fees.

For fees for Partial Students, see p. 35.

Board and Rooms can be obtained at a cost of from $15 to $25 per month; Rooms only, from $4 to $10 per month; Board only, from $12 to $18 per month.

Students can obtain a list of Boarding Houses on application to the Registrar of the University.

[The McGill Y. M. C. A. will arrange that a stranger to the city shall be met at the railway station, and aided to secure lodgings, etc., if he send sufficient notice of time and station to the Secretary of the McGill Y. M. C. A., 844 Sherbrooke Street.]

Directions.

Directions to Candidates for Matriculation or Admission.

Candidates are required:—

(a) To pass or to have passed the required examinations (pp. 6 seq.) Candidates claiming exemption, according to the regulations given below, from examination in any subject on the ground of examinations previously passed, must present certificates of standing in the latter. Candidates must pay a fee of $5 before admission to the entrance examination in September. (See Fees, p. 35.)

(b) To present themselves to the Dean at the beginning of the session, and fill up a form of application for matriculation or admission.

(c) To procure tickets from the Registrar, and to sign the declaration given on p. 13.

(d) To present their tickets to the Dean.

(e) To provide themselves with the Academic dress.

I. REGULATIONS FOR ENTRANCE.

Students in the Faculty of Arts are classified as Undergraduates or Partial Students. The latter take what classes they choose, subject to the approval of the Professors.

Undergraduates.

Undergraduates alone can proceed to the degree of B.A. or B.Sc. Candidates for admission to the First Year as Undergraduates are required, unless otherwise qualified, to pass the First Year Entrance Examination. Two examinations for entrance are held in each year, as follows:

(1) In June, concurrently with the examinations for the certificate of Associate in Arts.

Any Head Master or other person desiring a local examination must, before May 10th, submit to the Secretary of the Examining Board, the name of some suitable person, preferably a University Graduate, who is willing to act as Deputy Examiner, *i.e.*, receive the questions, hold the examinations, and forward the answers to Montreal.

The special fee for this local examination, viz., $4.00 for each candidate, must be paid to the Deputy Examiner before the commencement of the examination. The Deputy Examiner will retain half of the fee as compensation for his services, and send the balance to the Secretary of the Examining Board. The University will not be re-

sponsible for local expenses. An additional fee of $5.00 is charged to candidates who intend to register in the Faculty of Medicine; this fee must be forwarded to the Secretary with the application for examination.

(2) At the opening of the session, on September 14th, and following days, in McGill College only.

The following regulations with regard to the First Year Entrance Examination are in force:—

Except in special cases, no candidate will be admitted to the First Year Entrance Examination unless he is at least sixteen years of age, and produces a certificate to that effect, if deemed necessary.

Candidates can become Undergraduates of the First Year by passing (*a*) the June or September Entrance Examination of the First Year, or (*b*) the First Year Exhibition Examination, or (*c*) by presenting a certificate regarded by the Faculty as equivalent to either examination. (For regulations concerning candidates who pass the Entrance Examination in part, see below.)

These examinations are held only on the days in June and September appointed in the Calendar. Special arrangements can be made for the examination of candidates who are prevented from complying with the above regulation by severe illness or domestic affliction.

Candidates who, at the examinations for Associate in Arts, have passed in the subjects of the Entrance Examination are admitted as Undergraduates.

June Candidates

Candidates who fail in one or more subjects at the June examination, or who have taken part only of the examination and present themselves again in the following September, will be exempted from examination in those subjects in which the Examiners may have reported them as specially qualified (*i. e.* marks not less than 50 per cent.).

September Candidates

Any candidate who fails in one and not more than one subject at the September Entrance Examination, may pass an equivalent examination at Christmas, or at the following Sessional Examinations, in the precise part of the subject in which he failed. In this regulation, Classics, Mathematics, and English are each regarded as a single subject.

Ontario and N. S. Candidates

At the June examination, candidates from Ontario may present an equivalent amount from the books prescribed for the Junior Matriculation Examination of the University of Toronto.

The Matriculation or Junior Leaving Examination accepted by the Universities of Ontario and the Leaving Examinations of Nova Scotia, are accepted by the Faculty, in so far as the subjects of their programme satisfy the Examiners of the Faculty, *i. e.*, when the subjects taken are the same as, or equivalent to those required in McGill University.

In the case of Candidates from Ontario, Second Class non-professional certificates will be accepted *pro tanto* in the Examination.

Normal School Candidates For qualifications required of Normal School Students, see Normal School Regulations.

Medical Students. Medical Students and Candidates for entrance into the first year of the Faculty of Medicine may present themselves for the First Year entrance examinations.

Note.—Candidates who have passed the examination are not matriculated until they have paid all the prescribed fees for the session and complied with the other University regulations. (See the Directions given in p. 4.) They may, however, obtain certificates of passing, on payment of a fee of $5.

First Year Entrance Examination.

Examinations for Entrance are held in June and September of each year. In 1899 they begin on June 12th in McGill College and local centres; on September 14th in McGill College only.

The subjects of the Entrance Examination for candidates taking the B.A. Course are:—

1. **English** (including **History**).
2. **Mathematics.**
3. **Latin** *or* **Greek.**
4. **Greek** *or* **Latin** (if not already taken).
   or **two Modern Languages.**
   or **one Modern Language** with the **Additional Mathematics** (p. 8).
5. **Elementary Natural or Physical Science,** viz.: one of the following: (*a*) **Physiography**; (*b*) **Botany**; (*c*) **Chemistry**; (*d*) **Physics**;
   or (*instead of this Elementary Science*) **A Language** not previously taken.

Exhibitions are offered for competition (see page 9), to candidates who take a prescribed examination in Greek, Latin, Mathematics, English, and one Modern Language. This is regarded as an alternative Entrance Examination.

The subjects of the Entrance Examination for candidates taking the B.Sc. Course are:—

1. **English.**
2. **Mathematics.**
3. One of the following:
   Latin, Greek, French, German.

4. One of the following:

(*a*) **Physiography**; (*b*) **Botany**; (*c*) **Chemistry**; (*d*) **Physics**; (*e*) a **Language** from (3) not previously taken; (*f*) **Additional Mathematics.**

NOTE.—Candidates who intend ultimately to proceed to the study of Medicine are reminded that for Medical Registration it will be necessary to take Latin.—Candidates for entrance into the Faculty of Applied Science must take "Additional Mathematics." Notice is hereby given that in and after May, 1901, an additional language will be required.

THE DETAILS OF THE EXAMINATION ARE AS FOLLOWS:

I. English.—Writing from Dictation. *Grammar.*—A paper on English grammar, including Analysis. The candidate will be expected to show a good knowledge of Accidence, as treated in any grammar prepared for the higher forms of schools. A similar statement applies to *grammatical* Analysis. Candidates are required to state the class to which any *subordinate* sentence belongs and to arrange and define the various members of all sentences set. *Failure in Analysis and Parsing will cause the rejection of the paper.* West's Elements of English Grammar is recommended as a text-book, and attention is particularly directed to pages 197-216. *English History.*—Candidates will be required to give the chief details of leading events. While any text-book written for the upper forms of schools may be used in preparation for the examination, GARDINER'S Outline of English History (Longmans) is recommended. *Composition.*—Candidates will write a short essay on a subject given at the time of the examination. *Literature.*—SCOTT'S Lady of the Lake, ed. Stuart (Macmillan). SHAKSPERE'S Richard II., ed. Deighton (Macmillan), *or* WORDSWORTH (Arnold's Selections as specified in Junior Matriculation English [1899] of the University of Toronto).*

Mathematics.—*Geometry*, Euclid's Elements, Books I., II., III., with easy deductions, *or* an equivalent. *Arithmetic*, Elementary rules, Vulgar and Decimal Fractions, Proportion, Percentage, Simple In-

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* Michael, To the Daisy ("Bright flower, whose home," etc.). To my Sister, Expostulation and Reply, The Tables Turned, "O Nightingale, thou surely art," At the Grave of Burns, Thoughts suggested the Day Following, The Solitary Reaper, The Primrose of the Rock, Ode to Duty, Sonnets: "Fair Star of Evening, Splendour of the West." "It is not to be thought of that the Flood," "Scorn not the Sonnet." "I am not one who much or oft delight." "Wings have we, and as far as we can go," "Nor can I not believe." "It is a beauteous Evening, calm and free." "I thought of thee, my partner and my guide." "A trouble, not of clouds, or weeping rain." "A Poet!—he hath put his heart to school." Influence of natural objects. Nutting. Character of the Happy Warrior. Elegiac Stanzas suggested by a Picture of Peel Castle. To the Rev. Dr. Wordsworth.

terest, etc., Square Root, and a knowledge of the Metric System. *Algebra,* Elementary Rules, Fractions, Factors, Equations of the First Degree, Simultaneous Equations of the First Degree, Indices, Surds and Easy Quadratics, Problems leading to Equations, Binomial Theorem.

Additional Mathematics.—The additional requirements in the Mathematical subjects referred to above, are as follows:

Geometry:—Euclid's Elements, Bks. IV and VI, with Defs. of Bk. V.; and easy deductions; *or* an equivalent.

Algebra:—The three Progressions; Ratio, Proportion and Variation; Permutations and Combinations; Scales of Notation; Logarithms; Interest and Annuities.

Trigonometry:—Measurement of angles; Trigonometrical ratios or functions of an angle and an arc, with their relations; Trig. ratios of the sum or difference of two angles; Reduction of formulæ; as in Galbraith and Haughton, first four chapters, or as in Hamblin Smith, pp. 1-100 (omitting chap. XI) or other elementary text-books; with deductions.

Greek.—XENOPHON, Anabasis, Book I.; Greek Grammar.

Latin.—CÆSAR, Bell. Gall. Books I. and II.; and VIRGIL, Aeneid, Book I.; Latin Grammar.

In both Greek and Latin, **Translation at Sight and Prose Composition** sentences or easy narrative, based upon the prescribed prose text) will be required.

At the September, but not at the June, examination, other works in Greek or Latin equivalent to those specified may be accepted, if application be made to the Professors of Classics at least a fortnight before the day of examination.

French.—Grammar, including Syntax. Bertenshaw's French Grammar (Longmans) is recommended as containing the minimum amount of grammar required for this examination. Easy translation from French into English, and from English into French; Dictation or similar exercise. Candidates are expected to be able to write French without gross mistakes in spelling or grammar. Special credit will be given for evidence of familiarity with the spoken language.

German.—The whole of JOYNES' German Reader and BAUMBACH'S Schwiegersohn (Heath & Co.), (or texts approximately equal in amount) together with a thorough knowledge of German accidence. Candidates must also be able to translate into German with tolerable correctness exercises approximately equal in difficulty to those contained in the First Part of VANDERSMISSEN'S High School German Grammar or in the First and Second Parts of the JOYNES-MEISSNER German Grammar (Heath & Co.).

Physiography.—The elements of the Science—as in TARR'S First Book of Physical Geography, *or* HINMAN'S Eclectic Physical Geography, *or* other text-book covering the same ground.

Botany.—As in GROOM'S Elementary Botany, PENHALLOW'S Guide to the Collection of Plants and Blanks for Plant Description.

Credit will be given for plant collections.

Note.—Teachers may substitute any plant of the same family for any one of those specified in part II. of GROOM'S Elementary Botany, according to requirements of the locality.

Chemistry.—Elementary Inorganic Chemistry, comprising the preparation and properties of the chief non-metallic elements and their more important compounds, the laws of chemical action, combining weights, etc. (The ground is simply and effectively covered by REMSEN'S "Elements of Chemistry," pp. 1 to 160.)

Physics.—Properties of Matter; Elementary Mechanics of Solids and Fluids, including the Laws of Motion, Simple Machines, Work, Energy; Fluid Pressure and Specific Gravity; Thermometry, the effects and modes of transmission of Heat. (See, for instance, GAGE'S Introduction to Physical Science, ch. I-V.)

NOTE.—Candidates may take Arithmetic, and all the English subjects except Literature, at the June Examination of one year, and the remainder at the Entrance examination of the following year.

*First Year Exhibitions.

The First Year Exhibition Examination will be held at McGill College, Montreal; and also at any of the following centres, provided that application in writing be made to the Secretary of McGill University by intending candidates, not later than September 1st, viz:—

Toronto, Kingston, and Ottawa, Ont.; Halifax, N.S.; St. John, N.B.; Charlottetown, P.E.I.; Winnipeg, Man.; Victoria, and Vancouver, B.C.; St. John's, Nfld.

No application received after September 1st will be considered.

All the other Entrance, Exhibition, and Scholarship Examinations of September, 1899, (see pp. 6 and 37) will be held at McGill University only.

NOTE.—As the changes in the First Year Exhibition subjects for September, 1899, stated in the University Calendar for 1898-99 (p. 80), have escaped the notice of teachers, the Faculty has resolved to accept either the former list of subjects or the revised one, as below.

*For detailed notice, see p. 39.

Subjects of Examination:—

FIRST YEAR.—**Greek.**—(*a*) Xenophon, Anabasis, II. *or* I. *or* Hellenics, I.: (*b*) Homer, Odyssey, XIII. *or* VII., *or* Plato, Apology: (*c*) Euripides, Sidgwick's Scenes from Hecuba, *or* Iliad VI. *or* IV. *or* Plato, Crito.

FIRST YEAR.—**Latin.**—(*a*) Caesar B. G., Bks. I., II. *or* V. and VI.; *or* Tacitus, Agricola; (*b*) Virgil, Aeneid, V. *or* VI. *or* I.; (*c*) Cicero, Catiline Orations, I., II. *or* III. and IV. *or* Pro Milone, *or* Horace, Odes I.

A paper on Greek and Latin Grammar. **Translation at Sight** from easy Greek and Latin authors. Easy Latin and Greek **Prose Composition.**

Candidates who do not offer the books prescribed above will have the option of an additional paper in Composition and Translation at Sight.

Text-Books.—Sonnenschein's *or* Rutherford's Greek Grammar *or* Burnet's Greek Rudiments *or* White's First Greek Book; Abbott's Arnold's Greek Prose Composition; Sonnenschein's Latin Grammar, *or* Allen and Greenough's; Arnold's Latin Prose Composition by Bradley, *or* Collar's Latin Composition, Pts. III. and IV.

Mathematics.—*Euclid*, Bks. I., II., III., IV. with easy deductions; *Algebra*, same as for Passing with the addition of the three Progressions; *Arithmetic.*

English.—*Grammar.*—An advanced knowledge of this subject will be required, and, in addition, some acquaintance with the historical development of English, as illustrated in common and important word-forms. The candidate is recommended to read MASON'S or WEST'S Elements of English Grammar and expected to supplement Mason or West by using MORRIS'S Historical Outlines of English Accidence (Macmillan), as a book of reference. *English Literature.*—The works to be read are those selected for the First Year Examination for Passing with the addition of MILTON'S L'Allegro and other short poems, ed. Bell (Macmillan), and the following Essays of Macaulay:—Ranke's History of the Popes; Frederick the Great; Dumont's Recollections of Mirabeau. *Composition.*—The candidate will be required to write an essay on some subject connected with the literature prescribed.

French.—*Grammar*, including Syntax.—Easy translation from French into English, and English into French. A. Dumas, La question d'Argent. About, L'homme á l'oreille cassée. Labiche, Moi. Oral examination.

or, instead of **French**:

German.—*Grammar* (an amount equal to Vandersmissen, *or* Joynes-Meissner, Accidence and Syntax, including exercises in translation); Joynes' German Reader; Baumbach, Der Schwiegersohn (Heath & Co.); Benedix, Plautus und Terenz, and Die Sonntagsjäger (Heath & Co.).

The First Year Exhibitions will be awarded to the best candidates in the above subjects, provided there be absolute merit.

But in subsequently distributing the Exhibitions of higher value among the successful candidates, work in the following subjects will be taken into account also:—

1. **Higher Composition, and Translation at Sight (Latin and Greek)**.

2. **Euclid**, Book VI. (omitting Props. 27, 28, 29), with Defs. of Book V. and easy deductions.

Algebra:—Ratio, Proportion and Variation; Permutations and Combinations; Scales of Notation; Logarithms; Interest and Annuities.

Trigonometry:—To the beginning of the solution of oblique-angled triangles, with deductions, as in Galbraith & Haughton or other elementary text-books.

3. **English**:—An Examination on Henry Morley's First Sketch of English Literature, chaps. VII. and VIII.

NOTE.—The First Year Exhibition Examination will be regarded as an Entrance Examination.

Changes for September, 1900.

In the First Year Exhibition Examinations, September, 1900, the following will be substituted for the corresponding books given above.

Latin.—Caesar, Bell Gall., V., VI. Virgil, Aeneid II. *or* V.; Cicero, in Cat. III., IV., *or* Horace, Odes III.

Greek.—Xen., Anab. I. *or* II. Homer, Odyssey XV. Euripides, Hecuba (Sidgwick's "Scenes") *or* Homer, Iliad I. *or* VI.

English Literature.—Scott, Lady of the Lake, ed. Stuart (Macmillan). (*a*) Shakspere, Richard II., ed. Deighton (Macmillan). Milton, L'Allegro and other short poems, ed. Bell (Macmillan). or (*b*) The works specified for the Junior Matriculation Examination of the University of Toronto for 1900.

In addition to Scott and (*a*) or (*b*), the Essays of Macaulay mentioned in the English requirements for the First Year Exhibition, p. 10.

French.—E. Pailleron, Le Monde où l'on s'ennui. P. Loti, Pages choisies (chez A. Colin, Paris). About, Le Roi des Montagnes. Oral examination.

German.—Add to texts already prescribed:—AUERBACH'S Brigitta.

Second Year.

Admission to the Second Year is open, as a rule, only to Undergraduates who have passed the First Year Sessional Examination in regular course.

But candidates of exceptional ability may, in certain cases to be dealt with by a Standing Committee appointed for the purpose, be admitted directly to the Second Year, without having passed through the curriculum of the First Year.

Partial students of the First Year should understand that passing the Sessional Examinations of the First Year is not, *ipso facto*, a qualification for Undergraduate Standing of the Second Year.

Except in special cases, no one will be admitted to the Second Year unless he is at least seventeen years of age, and produces a certificate to this effect if deemed necessary.

Students of other Universities.

Students of other Universities.—Any student of another University desirous to be admitted to this University with equivalent standing is requested to send with his application:—

1st.—A Calendar of the University in which he has studied giving a full statement of the courses of study.

2nd.—A complete statement of the course he has followed.

3rd.—A certificate of the standing gained, and of conduct.

These will be submitted to the Faculty.

The Faculty, if otherwise satisfied, will decide what examination, if any, or what conditions, may be necessary before admitting the candidate.

Partial Students.

Candidates for admission as Partial Students may attend any class, without previous examination, provided they give the Professor satisfactory evidence of their ability to proceed with the work of the course.

No one will be admitted as a Partial Student unless he is at least sixteen years of age, and produces a certificate to this effect if deemed necessary.

General Regulations.

Every student is expected to state at entrance the name of the religious denomination to which he belongs, and of the Minister under whose care he desires to be placed.

Lists of the Students belonging to the several denominations with the information thus given, will be sent, at the beginning of each session as soon as the classes are fully formed, to the Registrar's office, where they will be available for reference.

Every student is required to sign the following

Declaration

"I hereby declare that I will faithfully observe the statutes, rules, and ordinances of this University of McGill College, to the best of my ability."

II. REGULATIONS FOR DEGREES IN ARTS.

Regulations for the Degree of B.A.

After passing the First Year Matriculation Examination, an Undergraduate, in order to obtain the Degree of B.A. or B.Sc., is required to attend regularly the appointed courses of lectures for four years, and to pass the required Examinations in each year. A student cannot proceed with his course unless he has passed each Examination in its assigned order, If he fails at any one of these Examinations, he must pass it before being allowed to proceed with his course. Undergraduates are arranged in Years, from First to Fourth, according to their academic standing.

1. Ordinary Course for the Degree of B.A.

N.B.—The Roman numerals used in the following conspectus have no reference to any other parts of the Calendar—whereas the

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Arabic numerals refer to the numbering of the courses on pp. 56-88; for example, Greek, 2. refers to the second course given under the head of Classical Literature and History, p. 57.

First Year.

First Year.

I. Greek, 1, *or* Latin, 1.
II. English, 1, (with History) 1.
III. Mathematics, 1.
IV. Latin, 1, *or* Greek, 1, *or* French, 1, *or* German, 1.
V. Physics, 2.

Advanced Sections.

With a view to the encouragement of higher work, advanced sections will be formed in all subjects as far as practicable, and in these Honours may be awarded. Permission to take an advanced section is granted by the professor.

Students taking the work of advanced sections may be excused from the work of the corresponding ordinary sections on the recommendation of the professor. No exemptions from other subjects will be granted to students in advanced sections.

Second Year.

Second Year.

VI. English, 2A, 2B.
VII. Latin, 2, *or* Greek, 2.

Any three.

VIII. Greek, 2, *or* Latin, 2, *or* French, 2, *or* German, 2.
IX. Mathematics, including Dynamics, 3, *or* Elementary Biology and Dynamics.
X. Chemistry, 1, Laboratory work in addition.
XI. Logic and Psychology, 1.
XII. Hebrew, 1.

Advanced Sections.

Advanced Sections.—Advanced Sections will be formed in the Second Year, as in the First.

* Third Year.

XIII. Greek, 3, *or* Latin, 3.
XIV. Mathematical Physics, 3.

(In addition to the above, the student will take one subject from Div. (a), as below, a second from Div. (b), and a third from either. Subjects together with their laboratory courses, viz.:—Botany, Zoology, Chemistry, and Physics, shall in each case count as two courses.)

(Div. a.)

XV. Greek, 3. (If Latin, 3 has been taken.)
XVI. Latin, 3. (If Greek, 3 has been taken.)

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* The subjects of the Third and Fourth Years stand as in the old curriculum. They will be changed in 1900 and 1901.

XVII. English and Rhetoric, 3A, 3B.
XVIII. Mental Philosophy, 2.
XIX. French, 3. (If the subject has been taken in 1st. or 2nd. Year.)
XX. German, 3. (If the subject has been taken in 1st. or 2nd. Year.)
XXI. Hebrew, 2.

(Div. b.)

XXII. Optics, 4 (a), and Descriptive Astronomy, 4 (b). (Open to students who have taken XIV.)
XXIII. Experimental Physics, 6. (Open to students who have taken XIV.)
XXIV. Laboratory Course in Physics, 8.
XXV. Botany, 1a.
XXVI. Zoology, 1.

Physiology and Histology, *or* Anatomy and Practical Anatomy, may, by Medical students only, be substituted for two courses of this Division.

* Fourth Year.

XXVII. Greek, 4.
XXVIII. Latin, (Optional—instead of XXVII.)
XXIX. Moral Philosophy, 3.
XXX. Mathematical Physics, 3. (Optional instead of XXVII.)

(In addition to the above, the student will take one subject from Div. (a), as below, a second from Div. (b), and a third from either. Subjects together with their laboratory courses, viz.:—Botany, Zoology, Chemistry, Physics, Geology and Mineralogy, shall in each case count as two courses.)

(Div. a.)

XXXI. Greek, 4. (If XXVIII has been taken.)
XXXII. Latin 4. (If XXVII has been taken.)
XXXIII. English Literature, 4.
XXXIV. French, 4. (If XIX has been taken.)
XXXV. German, 4. (If XX has been taken.
XXXVI. Hebrew, 3.

Div. (b.)

XXXVII. Astronomy, 5, and Optics, 4. (If XIV has been taken.)
XXXVIII. Exp rimental Physics, 7.
XXXIX. Laboratory Course in Physics, 9.
XL. Botany, 1b.
XLI. Zoology, 2.
XLII. Mineralogy and Geology, 1.

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* The subjects of the Third and Fourth Years stand as in the old curriculum. They will be changed in 1900 and 1901.

N.B.—Students claiming exemptions cannot count XXXVII and XXXVIII as subjects for the B.A. Examinations, unless they have taken XIV.

For details of each subject, see Courses of Lectures, p. 56 *et seq.*

A Candidate who seeks to obtain an Ordinary B.A. Degree of the First Class must fulfil the following conditions. He must not only obtain the required aggregate of marks (viz., three-fourths of the maximum), but he must also obtain First Class standing in three of the departments, and not less than Second Class in the remainder.

Declaration.

Every Candidate for the Degree of B.A. is required to make and sign the following declaration:

"Ego———polliceor sancteque recipio me pro meis viribus studiosum fore communis huius Universitatis boni, et operam daturum ut eius decus et dignitatem promoveam."

Notes on the Ordinary Course for B.A.

Additional Courses. Third and Fourth Year Students are not restricted to the choice of two distinct subjects in one of the above divisions. They may select one subject only, together with an additional Course in the same subject, or in any other of the subjects which they have chosen, in which such Additional Course may be provided by the Faculty; the above rules, however, must be complied with, and Students must have been placed in the First Class in the corresponding subject at the preceding Sessional Examination, viz. :—Intermediate or Third Year, according to standing.

The Additional Course is intended to be more than equivalent, in the amount of work involved, to any of the other subjects in the Division.

(For details of Additional Courses provided, see pp. 18-19.)

Professional Students. For arrangements enabling Students in Medicine or Applied Science to take the course in Arts also, and obtain B.A., with B.Sc. (Applied Science), or M.D., in six years, see pp. 27-28.

Partial Students. Undergraduates who have previously been Partial Students, and have in this capacity attended a particular Course or Courses of Lectures, may, at the discretion of the Faculty, be exempted from further attendance at these Lectures.

2. Honour Courses.

Honours of First, Second, or Third Rank will be awarded to successful candidates in any Honour Course established by the Faculty, provided they have passed creditably the ordinary Examinations in all the subjects proper to their year.

No Undergraduate is permitted to attend the Honour lectures unless (*a*) he has been placed in the First Class in the subject at the preceding Sessional Examination, if there be one; (*b*) has satisfied the Professor that he is otherwise qualified; and (*c*) while attending lectures makes progress satisfactory to the Professor. In case his progress is not satisfactory, he may be notified by the Faculty to discontinue attendance.

Honour lectures are open to all Partial Students who can satisfy the Professor of their fitness to proceed with the work of the course. Such students will not be ranked with Undergraduates in the Examination lists.

Candidates for Honours in the Third Year.

A Candidate for Honours in the Third Year, in order to obtain exemptions, must have taken a First Class at the Ordinary Sessional Examinations in the subject in which he proposes to compete for Honours, *or* a First or Second Class in the Advanced Section of that subject; must stand higher than Third Class in not less than half of the remaining subjects, and have no failure in any subject. Such Candidate shall be entitled in the Third Year to exemption from lectures and examinations in any one of the subjects of the Year (see pp. 14-15), except that in which he is a Candidate for Honours. A Candidate for Honours in the Third Year who has failed to obtain Honours, shall be required to take the same examinations for B.A. as the ordinary Undergraduate.

Candidates for B. A. Honours.

A student who has taken First or Second Rank Honours in the Third Year, and desires to be a Candidate for B.A. Honours, shall be required to attend two only of the courses of lectures given in the ordinary departments (but see note on Honour Biology, p. 19), and to pass the two corresponding examinations only, at the ordinary B.A. Examination. A Candidate, however, who at the B.A. Examinaitons obtains Third Rank Honours, will not be allowed credit for

these exemptions at the end of the Session, unless the examiners certify that his knowledge of the whole Honour Course is sufficient to justify it.

Note.—For subjects of Ordinary Course, see pp. 13-15.

Honour and Additional Courses.

Students who intend to graduate with Honours in any of the following Departments, are strongly recommended to take the Advanced Sections of the Department in the First and Second Years, where such are provided.

(N.B.—The numbers which stand after the Academic years refer to the corresponding numbers of the Courses given on pp. 56-88.)

1. Classical Literature and History.

THIRD YEAR HONOURS. Greek, 5.
Latin, 5.
FOURTH YEAR HONOURS. Greek, 6.
Latin, 6.

2. English Language and Literature and History.*

THIRD YEAR HONOURS, 6, 8, 10, 12, 14.
THIRD YEAR ADDITIONAL, 6 or 10.
FOURTH YEAR HONOURS, 5, 7, 9, 11, 13, 15.
FOURTH YEAR ADDITIONAL, 7 or 11 or 15.

Modern Languages (French and German) and History.

3. French.

THIRD YEAR HONOURS, 5.
FOURTH YEAR HONOURS, 5.

4. German.

THIRD YEAR HONOURS, 5*a* and 5*b*.
THIRD YEAR ADDITIONAL, 5*a*.
FOURTH YEAR HONOURS, 6*a* and 6*b*.
FOURTH YEAR ADDITIONAL, 6*a*.

5. Semitic Languages.

THIRD YEAR HONOURS, 4*a* and 4 *b*.
THIRD YEAR ADDITIONAL, 4*b* without Literature.
FOURTH YEAR HONOURS, 5*a* and 5*b*.
FOURTH YEAR ADDITIONAL, 5*b* without Literature.

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* For Course in History see p. 74.

6. History.

THIRD AND FOURTH YEAR HONOURS, 4.

7. Mental and Moral Philosophy.

THIRD YEAR HONOURS, 4.
FOURTH YEAR HONOURS, 5, 6.

8. Mathematics and Physics.

THIRD YEAR HONOURS, 7, 8.
FOURTH YEAR HONOURS, 9, 10, 11.

9. Geology and Mineralogy.

THIRD YEAR HONOURS, Mineralogy, 8, 10.
FOURTH YEAR HONOURS, Mineralogy, 9.
FOURTH YEAR HONOURS, Geology, 2, 3, 4, 5, 6.

10. Chemistry.

THIRD YEAR ADDITIONAL, 3, 5.
FOURTH YEAR ADDITIONAL, 4, 6.
Courses 2 (Second Year) and 7 (Fourth Year) are optional.

11. Biology.

FOURTH YEAR HONOURS, { Botany, 1*b*. / Zoology, 2.

With the Honour Course in Biology only one *ordinary course is required.*

3. Ordinary Course for the Degree of B.Sc. (Arts).

First Year.

The English, French, German, Mathematics and Physics of the ordinary B.A. Course.

Second Year.

English (two-thirds of the B.A. course in Second Year) p. 63.
Logic (one-third of the B.A. course in Second Year) p. 75.
French; German; Chemistry; pp. 68, 71, 82.
Mathematics *or* **Botany of 3rd Year;** *or* **Zoology of 3rd Year.**

4. After passing the Intermediate examination, the candidate for a B. Sc. degree will specialize in the subjects enu-

merated under the "Science" group of options in the B. A. curriculum. His choice of subjects will be determined according as he may intend to follow mainly the line of mathematico-physical studies or physico-chemical or biological, or geological.

4. Regulations for the Degree of M.A.

Bachelors of Arts of at least one year's standing who (*a*) shall have taken for one year a graduate course of study in Arts in the University, previously submitted to and approved by the Faculty, and (*b*) shall have passed an examination at the end of the course, and (*c*) shall have presented, if required, a satisfactory thesis, shall be entitled to the degree of Master of Arts. Bachelors of Arts of at least two years' standing who shall have presented a satisfactory thesis and passed a special examination, shall be entitled to the degree of Master of Arts.

Any Bachelor of Arts who graduated prior to May 1st, 1899, or any Undergraduate in Arts registered at that date, and proceeding thereafter to the degree of Bachelor of Arts, shall at his option be entitled to the degree of Master of Arts on the following conditions :

1. A Candidate must be a Bachelor of Arts of at least three years' standing.

Thesis.

2. He is required to prepare and submit to the Faculty a thesis on some literary or scientific subject, under the following rules:—

(a) The subject of the thesis must be submitted to the Faculty before the thesis is presented.

(b) A paper read previously to any association, or published in any way, cannot be accepted as a thesis.

(c) The thesis submitted becomes the property of the University, and cannot be published without the consent of the Faculty of Arts.

(d) The thesis must be submitted before some date to be fixed annually by the Faculty, which date must not be less

than two months before the Candidate proceeds to the Degree.

N.B.—The last day in the session of 1899-1900 *for sending in Theses for M.A. will be Jan.* 31*st,* 1900.

Examinations.

3. All Candidates, except those who have taken First or Second Rank B.A. Honours, or have passed First Class in the Ordinary Examinations for the Degree of B.A., are required to pass an examination also, either in Literature or in Science, as each Candidate may select.

(a) The subjects of the Examination in *Literature* are divided into two groups as follows:—

Group A.—Latin, Greek, Hebrew.
Group B.—French, German, English.

(b) The subjects of the Examination in *Science* are divided into three groups:—

Group A. — Pure Mathematics (advanced or ordinary), **Mechanics** (including Hydrostatics), **Astronomy, Optics.**

Group B.—Geology and Mineralogy, Botany, Zoology, Chemistry.

Group C.— Mental Philosophy, Moral Philosophy, Logic, History of Philosophy.

(c) Every candidate in Literature is required to select for Examination two subjects out of one group in the *Literature* section, and one out of the other group in the same section. Every Candidate in Science is required to select two out of the three groups in the *Science* section; and in one of the groups so chosen to select for Examination two subjects, and in the other group one subject.

(d) One of the subjects selected as above will be considered the principal subject (being so denoted by the candidate at the time of application), and the other two as subordinate subjects.

(e) The whole examination may be taken in one year, or distributed over two or three years, provided the examination in any one subject be not divided.

For further details of the examination, application must be made to the Faculty before the above date. For fees

see p. 36. (In case of failure, the candidate may present himself in a subsequent year without further payment of fees.) The examination will be held in April in McGill College only. A candidate after fulfilling all the conditions, ought to notify the Faculty of his desire to proceed to the degree at the next convocation.

NOTE.—*Candidates who obtained the degree of B.A. before* 1884, *may proceed to the degree of M.A. under the regulations in force previous to* 1884.

Lectures to Graduates.

Lectures are open to Bachelors of Arts who are candidates for M.A., the sessional examinations corresponding to these lectures being reckoned as parts of the M.A. examination. The subjects are Greek, Latin, English, French, German, History, Mental and Moral Philosophy, Chemistry, Botany, Geology and Mineralogy. Certificates of standing will be given.

Regulations for the Degree of M.Sc.

Bachelors of Arts or Bachelors of Science (Arts) may obtain the degree of Master of Science on conditions precisely similar to those given above for the degree of Master of Arts, except that the graduate course must be a course in Science in the Faculty of Arts.

Regulations for the Degree of D.Litt.

Candidates for the degree of Doctor of Literature must be Masters of Arts, who, being graduates at least of five years' standing, shall have distinguished themselves by special research and learning in the domain of Literature. They are required to present a satisfactory thesis or published work.

Regulations for the Degree of D.Sc.

Candidates for the degree of Doctor of Science must be Masters of Arts or Masters of Science, or Doctors of Medicine, who, being graduates of at least five years' standing, shall have distinguished themselves by special research and learning in the domain of Science. They are required to present a satisfactory thesis or published work.



4. Regulations for the Degree of LL.D.

Under the revised regulations of the University, the degree of Doctor of Laws will, after May 1st, 1899, be granted *honoris causa* only.

The degree of Doctor of Laws in course is open to graduates who obtained their degree prior to May 1st, 1899, and also to Undergraduates in Arts, who, being so registered at that date, shall thereafter proceed to graduation.

1. Candidates for the degree of LL.D. in course, must be Masters of Arts of at least twelve years' standing. Every candidate for the Degree of LL.D. in Course is required to prepare and submit to the Faculty of Arts, not less than three months before proceeding to the degree, twenty-five printed copies of a thesis on some Literary or Scientific subject which has been *previously approved by the Faculty*. The thesis must exhibit such a degree of literary or scientific merit, and give evidence of such originality of thought or extent of research as shall, in the opinion of the Faculty, justify recommendation for the degree.

N.B.—The subject should be submitted before the Thesis is written.

2. Every Candidate for the Degree of LL.D. in Course is required to submit to the Faculty of Arts, with his thesis, a list of books treating of some one branch of Literature or of Science, satisfactory to the Faculty, in which he is prepared to submit to examination, and in which he shall be examined, unless otherwise ordered by vote of the Faculty. For fees, see p. 36.

5. Examinations.

(A) College Examinations.

For Students of McGill College only.

1. There are two examinations in each year, viz., at Christmas and April. Successful students are arranged in three classes at the April examinations.

Christmas Examinations will be held in all the subjects of the First and Second Years. Candidates who fail in courses

of the First and Second Years, terminating at Christmas, will be required to pass at the Sessional Examinations on an extra paper in the subject in which they have failed.

Christmas Examinations in the Third or Fourth Years may be held at the option of the Professors.

In the Fourth Year only, there is no Sessional Examination; the University Examination for B.A. or B.Sc. takes its place.

2. Undergraduates who fail in one subject at the Sessional Examinations of the First or of the Second Year are required to pass a Supplemental Examination therein in the following September. Should they fail in this Examination, they must in the following Session attend the Lectures and pass the Examination in the same subject, in addition to the regular course, or pass the Examination only, without attending Lectures, at the discretion of the Faculty.

3. Failure in two or more subjects at the Sessional Examinations of the First or of the Second Year, or in one subject at the Third Year Sessional Examinations, involves the loss of the Session. The Faculty may permit the student to recover his standing by passing a Supplemental Examination at the beginning of the following Session.

4. Examinations Supplemental to the Sessional Examinations will be held in September, simultaneously with the Entrance Examinations, and at no other time.

5. A list of those to whom the Faculty may grant Supplemental Examinations in the following September will be published after the Sessional examination. The time for the Supplemental Examination will be fixed by the Faculty; the examination will not be granted at any other time, except by special permission of the Faculty, and on payment of a fee of $5.

(B) University Examinations.

I. For the Degree of B.A.

There are three University Examinations: The Matriculation at entrance; the Intermediate, at the end of the Second Year; and the Final, at the end of the Fourth Year.

1. The subjects of the Matriculation Examination are stated on pp. 6-9.

2. In the Intermediate Examination the subjects are :—

(a) **English** ;

(b) **Greek** *or* **Latin** ;

Any three
- (c) **Latin** *or* **Greek** *or* **a Modern Language.**
- (d) **Mathematics, including Dynamics** *or* **Elementary Biology and Dynamics.**
- (e) **Chemistry.**
- (f) **Logic and Psychology.**
- (g) **Hebrew.**

Intermediate.

English—The course for the second year. See pp. 63-64.

Greek.—THUCYDIDES "Rise of the Athenian Empire" (Colson, Macmillan), and "The Capture of Sphacteria" (Graves, Macmillan); SOPHOCLES, Electra. Prose Composition and Translation at sight of Greek (easy narrative) into English. General questions will also be set,—in History, on the Period of Athenian Supremacy, Cox's Athenian Empire, (Longmans' Epochs of Ancient History), with Abbott's Pericles (Putnams), and in Literature on the outlines as contained in Jebb's Primer of Greek Literature (pp. 1 to 100), (Macmillan).

A paper will also be set early in the course of the Session on the Summer Readings,—Luciani Vera Historia (Jerram, Clarendon Press): See p. 57.

Latin.—LIVY IX; QUINTILIAN X, Sections 37-131 (Peterson, Clarendon Press, smaller edition); HORACE, Historical and Political Odes (Church, Blackie and Son); Latin Prose Composition and Translation at sight of Latin into English; History, from the Tribunate of Gaius Gracchus to the Battle of Actium (as in Longman's Epoch Series or Shuckburgh's History); Literature: Wilkins Primer (Macmillan).

A paper will also be set early in the course of the Session on the Summer Readings,—Virgil, Georgics I: See p. 60.

French.—The Course for the Second Year. See pp. 68-69.

German.—The Course for the Second Year. See pp. 71-72.

Mathematics.—Arithmetic, Euclid, Books I., II., III., IV., VI. and defs. of Bk. V.—Algebra, including Quadratic equations; the three Progressions; Ratio, Proportion and Variation; Permutations and Combinations; Scales of Notation; Logarithms; Interest and Annuities; Elements of Determinants; Geometrical Conic Sections.—Solid Geometry. (Euclid, Bk. XI, and first two Props. of Bk. XII or equivalent); Spherical Trigonometry.

Dynamics.—Projectiles; Impact; Simple Harmonic Motion; Simple and Compound Pendulum; Energy of Rotation.

Chemistry.—The course for the second year. See p. 82.

Logic and Psychology.—The Course for the Second Year. See p. 75.

Hebrew.— The course for the second year.

3. For the Final or B. A. Ordinary Examination the subjects appointed are the obligatory subjects of the Third and Fourth Years, viz., Latin or Greek; Mathematical Physics (Mechanics and Hydrostatics, or Astronomy and Optics); Moral Philosophy; and those three subjects which the Candidate has selected in the Third and Fourth Years. (See p. 14, 15.)

Final.

Greek.—PLATO, Republic II, III, IV, to 435A; AESCHYLUS, Agamemnon; Composition and Translation at Sight; paper on the Constitutional History of Athens, Greek Literature and Antiquities. A Paper will also be set *in October* on the Summer Readings,—Merriam's "The Phaeacians of Homer" (Harpers. See p. 58.)

Latin.—CICERO, Philippics V and VII; LUCRETIUS, I,—III (Selections); TACITUS, Histories II. Composition and Translation at Sight. History of the Roman Empire to the reign of Domitian. A paper will also be set *in October* on the Summer Readings, Horace. Epistles II. with De Arte Poetica. See p. 61.

Mathematical Physics.—Mechanics and Hydrostatics, as in LONEY's Mechanics and Hydrostatics; or Optics and Astronomy, as in GALBRAITH and HAUGHTON or BRINKLEY.

Mental and Moral Philosophy.—MURRAY's Introduction to Ethics.

Natural Science.—(*a*) Mineralogy and Geology. See p. 87; *or* (*b*) Botany. See p. 85; *or* (*c*) Zoology. See p. 86; *or* (*d*)

Practical Geology and Palaeontology (Additional). See p. 88; *or* (*e*) Practical Chemistry (Additional). See p. 83.

Experimental Physics.—Electricity and Magnetism. (See courses of Lectures, p. 80.)

English Literature — The course for the Fourth Year. See p. 64.

French.—The Course for the Fourth Year. See p. 69.

German.—The Course for the Fourth Year. See p. 72.

Hebrew.—Isaiah I to X; LIII; LV; Psalms LXVI to LXXI. Grammar, Syntax; Reading of the Masoretic notes, the Septuagint Version and the Vulgate. Translation at sight.

N.B.—For additional Courses on above subjects see pp. 18-19.

6. Exemptions for Students in Professional Faculties.

General Regulations – Students of the Third and Fourth Years, matriculated in the Faculties of Law, or Medicine, or Applied Science, or in any affiliated Theological College, are entitled to exemption from any one of the Ordinary Subjects required in the Third and Fourth Years. (For rule concerning Special Certificates, see p. 29.)

To be allowed these privileges in either Year, they must give notice, at the commencement of the session, to the Dean of the Faculty of Arts, of their intention to claim exemptions as Professional Students, and must produce, at the end of the session, certificates of attendance on a full course of Professional Lectures during the Year for which the exemption is claimed.

Medicine

Students registered in the Faculty of Medicine are allowed the following privileges:—

In the Third Year in Arts, they may, if following the full course of the First Year in Medicine, take Physiology and Histology with practical work therein, or Anatomy and Practical Anatomy, as two of the courses under the heading of Science in the Ordinary Course.

Medical Students who have completed the Third Year in Arts and First Year in Medicine are required in the Fourth Year in Arts to take two only of the subjects of the Ordinary Course (or one subject with the Additional Course therein). Medical Students are recommended to continue in the Third and Fourth Years of the Arts Course subjects they have taken in the First and Second Years.

To secure these privileges, certificates of registration in the Medical Faculty must be presented at the beginning of each year to the Dean of the Faculty of Arts; and at the end of each session in the first two years, certificates of attendance on lectures and of passing

the corresponding examinations must also be presented. At the end of the Third and Fourth Years, certificates must be presented to show that the full curriculum of the Medical Faculty for the year has been completed.

Applied Science.

Students in the Faculty of Applied Science, who have passed the first two years in Arts, are allowed, while pursuing the course in Applied Science, to substitute certain courses in Applied Science for the corresponding courses in Arts, and to distribute the work of the Third and Fourth Years in Arts over three years, so that they may be enabled to take the B.A. Degree at the end of the Fifth Year from entrance. For the details, application may be made to the Dean of the Faculty of Arts. Certificates of attendance, etc., in Applied Science will be required.

The above arrangements will enable candidates for the M.D. or B. Sc. (Applied Science) degrees to pursue the course in Arts also, leading to the B.A. degree, and complete both courses in six years.

Literate in Arts.— A certificate of "LITERATE IN ARTS" will be given along with the professional degree in Medicine or Applied Science, to those who have completed two years' study in the Faculty of Arts, and have passed the prescribed examinations.

Students of the University attending affiliated Theological Colleges.

Theological Colleges.

1. These students are subject to the regulations of the Faculty of Arts in the same manner as other students.

2. The Faculty will make formal reports to the governing body of the Theological College which any such student may attend as to :—(1) their conduct and attendance on the classes of the Faculty; and (2) their standing in the several examinations; such reports to be furnished after the Examinations, if called for.

3. Undergraduates are allowed no exemptions in the course for the Degree of B.A. until they have passed the Intermediate Examination.

4. In the Third and Fourth Years they are allowed exemptions, as stated above.

7. Medals, Prizes, Classing, and Certificates.

1. **Gold Medals** will be awarded in the B.A. Honour Examinations to Students who take the highest Honours of the First Rank in the subjects stated below, and who shall have passed creditably the Ordinary Examinations for the Degree of B.A., provided they have been recommended therefor to

the Corporation by the Faculty on the report of the Examiners:—

The Henry Chapman Gold Medal for Classical Languages and Literature.

The Prince of Wales Gold Medal for Mental and Moral Philosophy.

The Anne Molson Gold Medal for Mathematics and Natural Philosophy.

The Shakspere Gold Medal for the English Language, Literature and European History.

The Logan Gold Medal for Geology, Mineralogy and Palaeontology.

The Major Hiram Mills Gold Medal for a subject to be chosen by the Faculty from year to year.

If there be no candidate for any Medal, or if none of the Candidates fulfil the required conditions, the Medal will be withheld, and the proceeds of its endowment for the year may be devoted to prizes in the subject for which the Medal was intended. For details, see announcements of the several subjects below.

3 Special Certificates will be given to those Candidates for B.A. who have been placed in the First Class at the ordinary B.A. Examination ; have obtained three-fourths of the maximum marks in the aggregate of the studies proper to their year ; are in the First Class in not less than half the subjects, and have no Third Class. At this examination, no Candidate who has taken exemptions (see p. 27) can be placed in the First Class unless he has obtained First Class in four of the departments in which he has been examined, and has no Third Class.

3. Certificates of High General Standing will be granted to those Undergraduates of the first two years who have obtained three-fourths of the maximum marks in the aggregate of the studies proper to their year, are in the First Class in not less than half the subjects, and have not more than one Third Class. In the Third Year the conditions are the same as for the Special Certificate for B.A.

4. Prizes or Certificates will be given to those Undergraduates who have distinguished themselves in the studies of a particular class, and have attended all the other classes proper to their year.

5. Graduates who attend lectures in any subject, and pass the corresponding Examinations therein, may obtain certificates of their standing, whether the course in question be Ordinary, Advanced or Honour.

6. His Excellency the Earl of Minto has been pleased to offer annually during his term of office a **Gold Medal** for the study of Modern Languages and Literature, with European History, or for First Rank General Standing, as may be announced.

(*a*) The Regulations for the former are as follows :—

(1) The subjects for competition shall be French and German, together with a portion of the History prescribed for the Honour Course for the Shakspere Medal. Information concerning the History may be obtained from the Professor of History.

(2) The Course of Study shall extend over two years, viz., the Third and Fourth Years.

(3) The successful Candidate must be capable of speaking and writing both languages correctly.

(4) There shall be examinations in the subjects of the course in both the Third and Fourth Years, at which Honours may be awarded to deserving Candidates.

(5) The general conditions of competition and the privileges as regards exemptions shall be the same as for the other Gold Medals in the Faculty of Arts.

(6) Students from other Faculties shall be allowed to compete, provided they pass the examinations of the Third and Fourth Years in the above subjects.

(7) Candidates desiring to enter the Third Year of the Course, who have not obtained first-class standing at the Intermediate or Sessional Examinations of the Second Year in Arts, are required to pass an examination in the work of the first two years of the Course in Modern Languages, if called on to do so by the Professors.

(8) The subjects of Examination shall be those of the Honour Course in Modern Languages.

(*b*) The Regulations for the Gold Medal, if awarded for First Rank General Standing, are as follows:—

(1) The successful Candidate must take no exemptions or substitutions of any kind, whether Professional or Honour, in the Ordinary B.A. Examinations.

(2) He shall be examined in the following subjects:—

(*a*) CLASSICS (both languages) ; (*b*) MECHANICS, HYDROSTATICS, OPTICS, ASTRONOMY ; (*c*) MORAL PHILOSOPHY ; and any *two* of the following subjects, or any *one* of them with its Additional Course ; (*d*) GEOLOGY, etc.; (*e*) EXPERIMENTAL PHYSICS; (*f*) ENGLISH; (*g*) GERMAN.

(3) His answering must satisfy special conditions laid down by the Faculty.

(4) The same Candidate cannot obtain the Gold Medal for First Rank General Standing and also a Gold Medal for First Rank Honours.

6. The Neil Stewart Prize of $15 is open to all Undergraduates and Graduates of this University, and also to Graduates of any other University, who are students of Theology in some College affiliated to this University. The rules which govern the award of this prize are as follows:—

(1) The Candidate must pass, in the First Class, a thorough examination upon the following subjects: Hebrew Grammar; reading and translation at sight from the Pentateuch, and from such poetic portions of the Scriptures as may be determined.

(2) There will be two Examinations of three hours each—one in Grammar and the other in Translation and Analysis.

(Course for the present year : Hebrew Grammar (Gesenius) ; Translation and analysis of Exodus ; Isaiah XL. to the end of the book.)

(3) In case competitors should fail to attain the above standard, the prize will be withheld, and a prize of $30 will be offered in the following year for the same.

This Prize, founded by the late Rev. C. C. Stewart, M.A., and terminated by his death, was re-established by the liberality of the late Neil Stewart, Esq., of Vankleek Hill.

7. Early English Text Society's Prize. —This prize, the annual gift of the Early English Text Society, will be awarded

for proficiency in (1) Anglo-Saxon, (2) Early English before Chaucer.

The subjects of Examination will be :—

(1) The Lectures of the Third and Fourth Years on Anglo-Saxon.

(2) Specimens of Early English, Clarendon Press Series, ed. Morris and Skeat, Part II., A. D. 1298—A. D. 1393. The Lay of Havelok the Dane (Early English Text Society, ed. Skeat).

8. New Shakspere Society's Prize. —This Prize, the annual gift of the New Shakspere Society, open to Graduates and Undergraduates, will be awarded for a critical knowledge of the following plays of Shakspere:—

Hamlet; Macbeth; Othello; King Lear.

9. Charles G. Coster Memorial Prize. —This Prize, intended as a tribute to the memory of the late Rev. Chas. G. Coster, M.A., Ph.D., Principal of the Grammar School, St. John, N.B., is offered by Colin H. Livingstone, B.A., to Undergraduates (men or women) from the Maritime Provinces, Nova Scotia, New Brunswick and Prince Edward Island. In April, 1899, it will be awarded to that Undergraduate of the First, Second or Third Year, from the above Provinces, who, in the opinion of the Faculty, has passed the most satisfactory Sessional Examinations, under certain conditions laid down by the donor.

10. Science Scholarships Granted by Her Majesty's Commission for the Exhibition of 1851. —These scholarships of the value of £150 a year are tenable for two or, in rare instances, three years. They are limited, according to the Report of the Commission, "to those branches of Science (such as Physics, Mechanics and Chemistry) the extension of which is specially important for our national industries." Their object is not to facilitate ordinary collegiate studies, but "to enable students to continue the prosecution of science with the view of aiding in its advance or in its application to the industries of the country."

Four nominations to these scholarships have already been

placed by the Commissioners in 1891, 1893, 1895 and 1897 at the disposal of McGill University, and have been awarded.

When nominations are offered, they are open to Students of not less than three years standing in the Faculty of Arts or of Applied Science, and are tenable at any University or at any other Institution approved by the Commission.

11. The names of those who have taken Honours, Certificates or Prizes will be published in order of merit, with mention, in the case of Students of the First and Second Years, of the schools in which their preliminary education has been received.

8. Partial Students.

As will be seen from the announcement, the courses of lectures to which Partial Students are admitted are such as are likely to prove attractive to those who have limited time at their disposal, and wish to enjoy the advantages of that higher instruction which the University offers to all qualified persons.

For conditions of Entrance see p. 13.

9. Attendance and Conduct.

All students shall be subject to the following regulations:—

1. A Class-book shall be kept by each Professor or Lecturer, in which the presence or absence of Students shall be carefully noted; and the said Class-book shall be submitted to the Faculty at all their ordinary meetings during the Session.

2. Each Professor shall call the roll at the beginning of the lecture. Credit for attendance on any lecture may be refused on the grounds of lateness, inattention, neglect of study, or disorderly conduct in the class-room. In the case last mentioned, the student may, at the discretion of the Professor, be required to leave the class-room. Persistence in any of the above offences against discipline shall, after admonition by the Professor, be reported to the Dean of Faculty. The Dean may, at his discretion, reprimand the student, or refer the matter to the Faculty at its next meeting, and may in the interval suspend from Classes.

3. Absence from lectures can only be excused by necessity or duty, of which proof must be given, when called for, to the Faculty, The number of times of absence, from necessity or duty, that shall disqualify from the keeping of a session shall in each case be determined by the Faculty.

4. Any student found guilty of dishonest practices at an examination is liable to expulsion from the University.

5. While in College, or going to or from it, Students are expected to conduct themselves in the same orderly manner as in the class-rooms. Any Professor observing improper conduct in the College buildings or grounds may admonish the student, and, if necessary, report him to the Dean. Without as well as within the walls of the College, every student is required to maintain a good moral character.

6. When students are brought before the Faculty under the above rules, the Faculty may reprimand, report to parents or guardians, impose fines, disqualify from competing for prizes or honours suspend from classes, or report to the Corporation for expulsion.

7. Any student who does not report his residence on or before November 1st in each year is liable to a fine of one dollar.

8. Any student injuring the furniture or buildings will be required to repair the same at his own expense, and will, in addition, be subject to such other penalty as the Faculty may see fit to inflict.

9. All cases of discipline involving the interests of more than one Faculty, or of the University in general, shall be immediately reported to the Principal, or, in his absence, to the Vice-Principal.

10. All students are required to appear in Academic dress while in or about the College buildings.

At a meeting of the Corporation in April, 1895, it was agreed to request all members of the University to appear in Academic dress at University Receptions, Conversaziones, etc.

(Students are requested to take notice that petitions to the Faculty on any subject cannot, in general, be taken into consideration, except at the regular meetings appointed in the Calendar.)

III. FEES.

All fees and fines are payable to the Bursar.

The fees must be paid to the Bursar, and the receipts shown to the Dean within a fortnight after the commencement of attendance

in each session. In case of default, the student's name will be removed from the College books, and can be replaced thereon only by permission of the Faculty, and on payment of a fine of $2.

Undergraduates matriculated before May, 1898, and Partial Students who have entered the affiliated Theological Colleges before May, 1898, and are pursuing the curricula of such Colleges, are subject to the old scale of fees.

1. Undergraduates.—$60 per session. This will include the fees for Laboratory work, Library, Gymnasium and Grounds, and Graduation. In the Third and Fourth Years, it will cover the normal amount of practical instruction given in each subject having a Laboratory Course.

Every candidate for the September Matriculation Examination must pay a fee of $5 *before admission to the examination.* This will be reckoned as part of the regular fees if he pass, but will not be returned in case of failure.

Matriculation fee for entrance into the Second Year, $10, in addition to the sessional fee.

2. Partial Students.—(First and Second Years.)—$16 per session for one course of lectures, including the use of the Library; $12 per session for each additional course.

3. Partial Students.—(Third and Fourth Years.)—$25 per session for one course of lectures, including the use of the Library; $20 per session for each additional course.

N.B.—The lectures in one subject in any one of the four College years constitute a "Course."

Partial Students are also required to pay $2 yearly for "Athletics and the care of the College grounds," unless they state in writing to the Dean their intention not to use the grounds.

Partial Students taking the full curriculum in any one year pay the same fees as Undergraduates in that year.

4. Graduates in Arts of this University are allowed, on payment of one-half of the usual fees, to attend all lectures, except those for which a special fee is exigible. For Bachelors of Arts proceeding to M.A. by taking for one year a graduate course of study, the fee is $40. This will cover Laboratory work.

5. Caution Money.—Every student is required to deposit with the Bursar the sum of $3 as caution money for damage done to furniture apparatus or books, etc.

Special Fees.

Elocution (optional)	$5 00
Gymnasium (for partial students), optional	2 50
Supplemental Examination, at the regular date fixed by the Faculty	2 00
Supplemental Examination, when granted at any other time than the regular date fixed by the Faculty	5 00
Certificate of standing, if granted to a student on application	1 00
Certificate of standing, if accompanied by a statement of classification in the several subjects of examination	2 00
Examination Fee for candidate intending to enter the Medical Faculty	5 00
Entrance Examination Certificates for candidates who may be prevented from proceeding to a course in the University	5 00

All applications for certificates must be addressed to the Registrar of the University, accompanied by the required fee.

No certificates are given for attendance on lectures unless the corresponding examinations have been passed.

In the Third and Fourth Years, under the old regulations, a special fee of ten dollars is charged for laboratory courses (optional) in Botany, Chemistry, Physics, and Zoology. A fee of five dollars is charged for the laboratory course (optional) in Petrography.

All fees for Supplemental Examinations must be paid to the Bursar, and the receipts shown to the Dean before the examination.

All fines are applied to the purchase of books for the Library.

Higher Degrees.

Fee for the Degree of M.A. or M.Sc.	$20 00
" " " (*in absentia*)	40 00
" " LL.D. (*old regulations*)	80 00
" " " D.Lit., or D.Sc.	80 00

The fees must be sent with the thesis to the Secretary of the University. This is a condition essential to the reception of the application. The Secretary will then forward the thesis to the Dean of the Faculty. If no thesis be required, the fees must be paid before the Examination.

IV. SCHOLARSHIPS AND EXHIBITIONS.

General Regulations.

1. A Scholarship is tenable for *two* years; an Exhibition for *one* year.

2. Scholarships are open for competition to Students who have passed the University Intermediate Examination, provided that not more than three sessions have elapsed since their Matriculation ; and also to Candidates who have obtained what the Faculty may deem equivalent standing in some other University, provided that application be made before the end of the Session preceding the examination.

3. Scholarships are divided into two classes :—(1) **Science Scholarships** ; (2) **Classical and Modern Language Scholarships**. The subjects of examination for each are as follows :—

Science Scholarships.—MATHEMATICS—Differential and Integral Calculus; Analytic Geometry; Plane and Spherical Trigonometry; Higher Algebra and Theory of Equations. NATURAL SCIENCE—Botany; Chemistry; Logic. (For subdivision, see below.)

Classical and Modern Language Scholarships.—Greek, Latin, English Composition; English Language and Literature; French or German.

4. Exhibitions are assigned to the First and Second Years.

First Year Exhibitions are open for competition to candidates for entrance into the First Year.

Second Year Exhibitions are open for competition to Students who have passed the First Year Sessional Examinations, provided that not more than two sessions have elapsed since their Matriculation; and also to candidates for entrance into the Second Year.

The subjects of examination are as follows:—

First Year Exhibitions.—CLASSICS, MATHEMATICS, ENGLISH, FRENCH, or GERMAN.

Second Year Exhibitions — CLASSICS, MATHEMATICS, ENGLISH LANGUAGE AND LITERATURE, FRENCH OR GERMAN.

5. The First and Second Year Exhibition Examinations will, for Candidates who have not previously entered the University, be regarded as Matriculation Examinations.

6. No student can hold more than one Exhibition or Scholarship at the same time.

7. Exhibitions and Scholarships will not necessarily be awarded to the candidates who have obtained the highest marks. An adequate standard of merit will be required.

8. If in any College Year there be not a sufficient number of candidates showing adequate merit, any one or more of the Exhibitions or Scholarships offered for competition may be given to more deserving candidates in another year.

9. A successful candidate must, in order to retain his Scholarship or Exhibition, proceed regularly with his College Course to the satisfaction of the Faculty.

10. The annual income of the Scholarships or Exhibitions will be paid in four instalments, viz. :—In October, December, February and April, about the 20th day of each month.

11. The Examinations will be held at the beginning of every session.

For the session of 1899-1900 there are twenty Scholarships and Exhibitions including the following:—

The Jane Redpath Exhibition, founded by Mrs. Redpath, of Terrace Bank, Montreal:—value, about $90 yearly, open to both men and women.

The Macdonald Scholarships and Exhibitions, founded by Sir W. C. Macdonald, Montreal:—value $125 each, yearly.

The Charles Alexander Scholarship, founded by Charles Alexander, Esq., Montreal, for the encouragement of the study of Classics and other subjects:—value $90 yearly.

The George Hague Exhibition, given by George Hague, Esq., Montreal, for the encouragement of the study of Classics:—value, $125 yearly.

The Major H. Mills Scholarship, founded by bequest of the late Major Hiram Mills:—value, $100 yearly.

The Barbara Scott Scholarship, founded by the late Miss Barbara Scott, Montreal, for the encouragement of the study of the Classical languages and literature:—value, $100 to $120 yearly.

Two Donalda Exhibitions, open to women:—value, $100 and $120 yearly.

One Donalda Scholarship.—value, $125 yearly.

Ottawa Valley Graduates' Society Exhibition, awarded on results of June Examination.

The Sir William Dawson Exhibition, given by the New York Graduates' Society.—value $60.

Exhibitions and Scholarships Offered for Competition at the Opening of the Session, Sept. 14th, 1899.

Through the liberality of private donors, the University is enabled to offer a number of additional Exhibitions (tenable for one year) to students entering the First Year.

The following is a complete list:—

Six Exhibitions of $125 each				(Open to men only)
One	"	"	**120**	
Three	"	"	**100**	" (Open to women only)*
One	"	"	**90**	

The Examination will be held at McGill College, Montreal, on Sept. 14th, 1899; and also at any of the following centres, provided that application in writing be made to the Secretary of McGill University by intending candidates not later than September 1st.

In the Province of Ontario, at Toronto, Kingston and Ottawa.

In the Province of Nova Scotia, at Halifax.

In the Province of New Brunswick, at St. John.

In the Province of Prince Edward Island, at Charlottetown.

In the Province of British Columbia, at Victoria and Vancouver.

In the Province of Manitoba, at Winnipeg.

In the Island of Newfoundland, at St. John's.

No application received after September 1st will be considered.

All the other Entrance, Exhibition and Scholarship Examinations of September, 1899, will be held at McGill University only, on the 14th of that month.

For subjects of Examination see pp. 9, *seq.*

To Students entering the Second Year, three Exhibitions of $125, and one of $100.

Greek.—Luciani Vera Historia (Jerram); DEMOSTHENES, Philippic I.; EURIPIDES, Medea.

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*One or more of these exhibitions may be given to candidates entering the Second Year. A modern language may be substituted for Greek.

Latin.—VIRGIL, Georgics, Bk. I.; HORACE, Odes, Bk. IV.; Livy, Bk. XXI.

Greek and Latin Prose Composition, and Translation at sight.

A paper on Grammar and History.

Text Books.—Myers' Ancient History; Abbott's Arnold's Greek Prose Composition, or Sidgwick's First Greek Writer, Ramsay's Latin Prose, Vol. I.

Mathematics.—Euclid (six books); Casey's Sequel to Euclid; Algebra (HALL AND KNIGHT'S Advanced); Theory of Equations (in part); Trigonometry (first six chapters, GALBRAITH AND HAUGHTON with deductions).

English and Modern History.—*Language.*—TRENCH, Study of Words. *Literature.*—SPENSER, Faerie Queene, Bk. I., ed. Percival (Macmillan); TENNYSON, Selections from Tennyson, ed. Rowe and Webb (Macmillan). *History.*—CHURCH, The Beginning of the Middle Ages (Epochs of Modern History, Longmans'). ***English Composition.***—The candidate will be required to write an essay on some subject connected with the literature or history prescribed.

French.—BALZAC, Le Cousin Pons; VICTOR HUGO, Ruy Blas; DE VIGNY, Le Cor; BARBIER, l'Idole. Grammar, Translation and Composition.

Or, instead of French:—

German.—German Grammar (an amount equal to JOYNES-MEISSNER, Accidence and Syntax, including all exercises in Translation); GRIMM, Kinder-und Hausmaerchen (Vandersmissen's edition); SCHILLER, Der Neffe als Onkel, Der Gang nach dem Eisenhammer; GOETHE, Hermann und Dorothea; BAUMBACH, Die Nonna (Heath & Co.); Translation from English into German; Translation at sight from German into English.

No Candidate who has been placed in the Third Class in more than one subject can be awarded a Second Year Exhibition.

To Students Entering the Third Year, five Scholarships of $125.

Two of these are offered in **Mathematics and Logic**, one of the two being for women only, and one in **Chemistry and Logic** as follows:—

Mathematics. — Differential Calculus (WILLIAMSON, Chaps. 1, 2, 3, 4, 7, 9; Chap. 12, Arts. 168-183 inclusive, Chap. 17, Arts. 225-242 inclusive). Integral Calculus (WILLIAMSON), Chaps. 1, 2, 3, 4, 5; Chap. 7, Arts. 126-140 inclusive; Chap. 8, Arts. 150-156 inclusive; Chap. 9, Arts. 168-176 inclusive). Analytic Geometry (SALMON), Conic Sections, subjects of chaps. 1-13 (omitting Chap. 8), with part of Chap. 14). LOCK, Higher Trigonometry; MCLELLAND and PRESTON, Spherical Trigonometry, Part I. SALMON, Modern Higher Algebra (first four chapters). TODHUNTER or BURNSIDE and PANTON, Theory of Equations (selected course).

Logic as in Jevons' Elementary Lessons in Logic.

Chemistry and Logic —CHEMISTRY.—Mendelieff, "The Principles of Chemistry." ESSAY.—The Value of the Periodic Law in the Determination of Atomic Weights. LOGIC, as in Jevons' Elementary Lessons in Logic.

Intending Candidates should consult the Professors of Chemistry with regard to the details of the chemical work.

NOTE.—This Scholarship will be awarded alternately in Chemistry (1900), and Botany (1901), with Logic as a subordinate subject in each case.

The remaining two Scholarships [viz., the Barbara Scott, $100, and the Charles Alexander, $90] are offered in **Classics and Modern Languages** as follows:—

Greek.—PLATO, Purves, Selections, pp. 1-112 (Clarendon Press); THUCYDIDES, Book VI. (Marchant, Macmillan); SOPHOCLES, Antigone (Jebb, Pitt Press); or Campbell and Abbott, Clarendon Press).

Latin.—HORACE, Epistles, Book I. (Wilkins, Macmillan): CICERO, *Pro Plancio* (Auden, Macmillan); VIRGIL, Aeneid, Book VI. (Sidgwick, Pitt Press); SALLUST, Catiline; CICERO, Select Letters (Abbott, Ginn & Co.).

Greek and Latin Prose Composition, and Translation at Sight.

Ancient History.—*Text-Books.*—SMITH, Student's Greece; MOMMSEN, Rome (abridged).

English and History.—*Literature.*—SHAKESPERE, Tempest, ed. Deighton (Macmillan); MILTON, Paradise Lost, Bks. I. and II. (Macmillan); LAMB, Essays of Elia, ed. Hallward and Hill (Macmillan). *History.*—MYERS, Mediaeval and Modern History (Ginn), Part I. *English Composition.*—The candidate will be required to write an essay on some subject connected with the literature or history prescribed.

English Composition.—High marks will be given for this subject.

French.—RACINE, Britannicus; MOLIERE, Le Misanthrope; A. DE MUSSET, Les Nuits; A. DE VIGNY, Cinq Mars. Grammar, LANSON, Literature Francaise. Oral Examination.

Or, instead of French:—

German.—SCHILLER.—Egmont's Leben und Tod (Buchheim), die Kraniche des Ibycus, Das Lied von der Glocke, der Kampf mit dem Drachen; IMMERMANN, Der Oberhof (Wagner, Pitt Press); GOETHE, Egmont; German Grammar and Composition; Translation from English into German; Dictation.

Changes for September, 1900.

In the Exhibition Examinations, September, 1900, the following will be substituted for the corresponding books in the Calendar for 1898-99.

SECOND YEAR.—**French.**—V. HUGO, Ruy Blas, BALZAC, Les Chouans, MICHELET, Pages choisies (chez A. Colin, Paris); DAUDET, Jack; Oral examination.

THIRD YEAR.—**French.**—V. HUGO, Préface de Cromwell; DE MUSSET, Les Nuits; DE VIGNY, Cinq Mars; MOLIERE, Le Misanthrope; RACINE, Britannicus; LANSON, Litterature française (18th and 19th Centuries); Oral examination.

SECOND YEAR.—**German.**—For GRIMM's Kinder-und Hausmärchen substitute:—HAUFF, Der Swerg Nase (Heath & Co.), RIEHL, Der Fluch der Schönheit (Heath & Co.), and BENEDIX, Die Hochzeitsreise (Heath & Co.).

THIRD YEAR (Men).—**German.**—Add to texts already prescribed:—GOETHE, Dichtung und Wahrheit (Heath & Co.); MEYER, Gustav Adolph's Page (Heath & Co.); SCHILLER, Die Braut von Messina.

V. UNIVERSITY BUILDINGS, Etc.

The University Library.

The various libraries of the University now contain about 70,000 bound volumes, besides many valuable pamphlets.

The books have been selected with a view to illustrating the various courses of University study. They are, therefore, to a considerable extent, general in character; and the Committee endeavours to provide for the symmetrical growth of the entire library.

There are, however, several large special collections, besides the departmental libraries. The late Mr. Peter Redpath was, for years before his death, engaged in forming the REDPATH HISTORICAL COLLECTION. This is still being added to by Mrs. Peter Redpath, is now of great value, and affords unusual opportunities for the study of English History. An important feature of the collection is a series of 3,500 political and religious tracts, which date from 1601 to about the middle of the present reign.

Abundant materials, bearing upon the History of Canada, have been gathered together. Of these the nucleus is formed by the entire library of the late Mr. Frederick Griffin, whose choice books were, some years ago, bequeathed to the University. This branch of the library is being steadily augmented.

The Medical Library, directly controlled by the Faculty of Medicine, is the largest of the departmental libraries, and is one of the most complete collections of its kind in the Dominion.

About 190 current periodicals, literary and scientific, are subscribed for through the various departments of the University. Besides these, the library regularly receives many Serials, Transactions and Proceedings of Societies. The list of both periodicals and serials is being extended yearly.

In the autumn of 1893, the general library was moved to the noble building erected by the late Mr. Peter Redpath. The building affords ample accommodation for two hundred readers, the reading room being exceptionally spacious and convenient. The latter is open in the evening, and contains a reference library and leading English and Foreign periodicals.

Although the library is maintained primarily for members of the University, the Corporation has provided for the admission, upon certain conditions, of such persons as may be approved by the Library Committee. It is the desire of the Committee to make the library as useful to the entire community as is consistent with the safety of the books and the general interests of the University.

MCGILL UNIVERSITY LIBRARY

EXTRACT FROM THE LIBRARY REGULATIONS.

1. During the College Session the Library is open daily (except Sundays and general public holidays), from 9 a.m. till 5 p.m.; and the Reading Room from 9 a.m. till 6 p.m., and also from 7.30 till 10.30 p.m. On Saturdays, both Library and Reading Room close at 5 p.m. During vacations, both Library and Reading Room close at 5 p.m., and on Saturdays at 1 p.m.

2. Students in the Faculty of Arts, of Law, or of Applied Science may borrow books on depositing the sum of $5 with the Bursar, which deposit, after the deduction of any fines due, will be repaid at the end of the Session on the certificate of the Librarian that the books have been returned uninjured.

3. Students in the Faculties of Medicine or Comparative Medicine, who have paid the Library fee to the Bursar, may read in the Library, and on depositing the sum of $5 with the Bursar, may borrow books on the same conditions as Students in Arts. They are required to present their Matriculation Tickets to the Bursar and to the Librarian.

4. Graduates in any of the Faculties, on making a deposit of $5, are entitled to the use of the Library, subject to the same rules and conditions as Students, but they are not required to pay the annual Library fee.

5. Books may be taken from the Library only after they have been charged at the Delivery Desk; borrowers who cannot attend personally must sign and date an order, giving the titles of the books desired.

6. Books in the Reference Library must not be taken from the Reading Room; and, after they have been used, they must be returned promptly by readers to their proper places upon the shelves.

7. Before leaving the Library, readers must return the books they have obtained, to the attendant at the Delivery Desk.

8. All persons using books remain responsible for them, so long as they are charged to them, and borrowers returning books, must see that their receipt for them is properly cancelled. Damage to, or loss of books shall be made good to the satisfaction of the Librarian and of the Library Committee. Writing or making any mark upon any book belonging to the Library is unconditionally forbidden. Any person found guilty of wilfully damaging any book in any way, shall be excluded from the Library, and shall be debarred from the use thereof for such time as the Library Committee may determine.

9. Should any borrower fail to return a book upon the date when its return is due, he may be notified by postal card of his default, and be requested to return the book. If the loan is not renewed, or the book returned, after a further delay of at least three days, it may be sent for by special messenger, at the borrower's expense.

10. Before the close of the session, Students in their final year shall return uninjured, or replace to the satisfaction of the Librarian, all books which they have borrowed.

11. Silence must be strictly observed in the Library.

The Peter Redpath Museum.

This building was erected in 1882 by the liberal benefactor whose name it bears. It occupies a commanding position at the upper end of the campus, and besides its central hall and other rooms devoted to the collections, contains a large lecture theatre, class-rooms and work-rooms.

The general arrangement of the collections is as follows:—

1. The Botanical Room on the ground floor contains the Herbarium, consisting of 30,000 specimens of Canadian and exotic plants, and collections illustrating structural and economic botany.

2. On the first floor is a room over the entrance hall, in which are cases containing archaeological and ethnological objects, with large slabs of fossil foot-prints on the walls.

3. This room opens into the great Museum Hall, on either side of which are alcoves with upright and table cases containing the collections in Palaeontology, arranged primarily to illustrate the successive geological systems, and subordinately to this, in the order of zoological and botanical classification, so as to enable the student to see the general order of life in successive periods, and to trace any particular group through its geological history.

4. At the extreme end of the Hall are placed the collections of minerals and rocks, arranged in such manner as to facilitate their systematic study. In the centre of the Hall are economic collections and large casts and models.

5. In the upper story or gallery of the great Hall are placed the zoological collections—the invertebrate animals in table cases in regular series, beginning with the lower forms, the vertebrate animals in upright cases, in similar order. The PHILIP CARPENTER COLLECTION of shells is especially noteworthy for its arrangement and completeness.

Details as to the several departments of the Museum are given in the "Museum Guide," and papers or memoirs relating to type specimens in the collections can be obtained from the Museum Assistant. Tickets are issued to students by the Professors in charge of the several departments, and classes of pupils from schools can be admitted on certain days, under regulations which may be learned from the Professors or from the Secretary of the University.

The Macdonald Physics Building.

The Macdonald Physical Laboratory contains five storeys, each of 8,000 square feet area. Besides a lecture theatre and its apparatus rooms, the Building includes an elementary laboratory nearly 60 feet square; large special laboratories arranged for higher work by advanced students in Heat and Electricity; a range of rooms for optical work and photography; separate rooms for private thesis work by Students; and two large laboratories arranged for research, provided with solid piers and the usual standard instruments. There are also a lecture room, with apparatus room attached, for Mathematical Physics, a special physical library, and convenient workshops. The equipment is on a corresponding scale, and comprises: (1) apparatus for illustrating lectures; (2) simple forms of the principal instruments for use by the Students in practical work; (3) the most recent types of all important instruments for exact measurement, to be used in connection with special work and research.

The following brief report will indicate the general nature and extent of the equipment:—

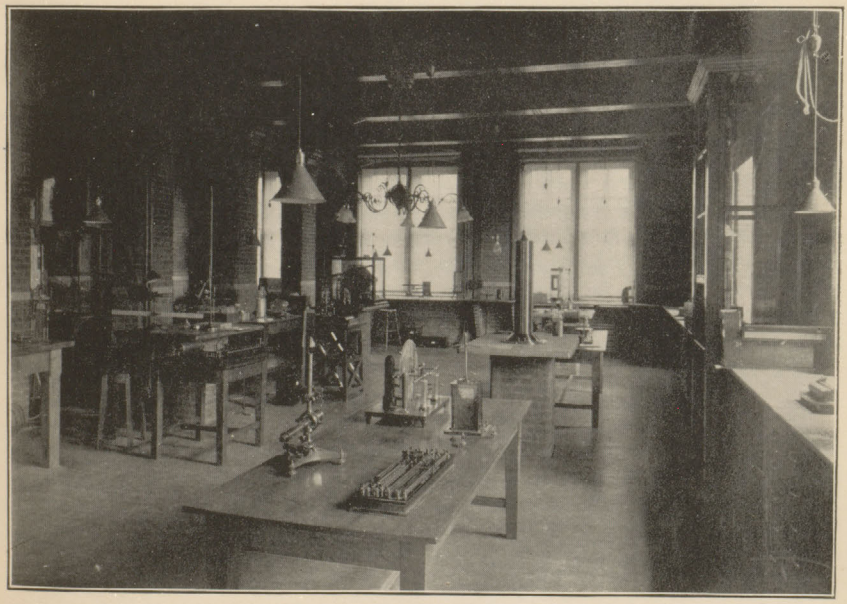
Resistance Standards.—There are about 30 standard resistance coils of various patterns, including the B.A., the Board of Trade, and the German, with a few others ranging in value from 1,000 ohms to one ten thousandth, and adapted for various purposes. These have been tested and compared and found to agree as closely as would be expected with the Cambridge certificates, and those of the Reichsanstalt and the makers. The temperature co-efficients of a few have also been determined. The comparisons have been chiefly made with Nalder's pattern of the Carey-Foster bridge.

There is also a duplicate of the Fleming bridge used at Cambridge, presented by the Duke of Devonshire.

For the comparison and determination of low resistances, a Loring apparatus with the improvements made by Professor V. Jones has been set up. Before being sent out to McGill University, the apparatus was set up and tested in England by Professors V. Jones and Ayrton, and a re-determination of the ohm made by its means. The



Macdonald Physics Building
Departmental Library.



Macdonald Physics Building.
An Electrical Laboratory.

apparatus is a very valuable addition to the laboratory equipment. Some determinations have already been made, and the apparatus is in satisfactory working order.

Resistance Boxes.—The collection of resistance boxes includes almost all the best types. There is a Thomson-Varley slide box by Nalder, which is extremely useful and accurate. Among the other boxes may be mentioned; two megohm boxes and four 100,000 ohm boxes of different patterns; a four dial and a six dial P.O. box, and a bar dial box of Prof. Anthony's pattern which has been permanently set up in the laboratory for the determination of resistances. For the comparison and determination of low resistances, there is a Kelvin conductivity bridge.

Current Standards.—There is a Kelvin composite balance, which can also be used as a voltmeter and wattmeter, and two Siemens dynamometers. The constants of these have been determined by the voltametric method, and found to be accurate to one-half of one per cent. They have been used for calibrating common types of alternate current instruments. There is also a set of 4 large storage cells, with convenient commutators and resistances for furnishing large steady currents for the testing of ammeters and low resistances, and for other purposes. This equipment is similar to that in use at the Board of Trade in England and in the laboratories of some leading instrument makers.

As an absolute current standard we have a duplicate of the Weber electro-dynamometer made by Latimer Clark for the Committee of the British Association, the coils of which were wound by Clerk Maxwell, and used by Lord Rayleigh in his standard experiments. The coils of this instrument have been rewound and measured, and an absolute determination of the E. M. F. of the Clark cell is now being made by its means.

Insulation and Capacity Tests.—For these and other tests there is a suitable collection of delicate reflecting galvanometers of the astatic, ballistic, differential and D'Arsonval types. The most delicate of these has a resistance of 110,000 ohms, and a figure of merit of upwards of 60,000 megohms with a 20 second swing.

There are eight quadrant electrometers of different types, the chief of which have been set up and used for various insulation and other tests. There is also one Kelvin absolute electrometer, and smaller portable electrometers and gauges on the same principle.

As a standard of capacity there is a cylindrical air condenser of the B. A. pattern. Its capacity has not yet been determined absolutely. By comparison with our certificated mica standards, it was found to be nearly one two-hundredth of a microfarad, the value intended by the maker.

The mica-standards and subdivided boxes have been carefully compared with each other and tested for insulation and absorption. They are above the average in quality and accuracy.

Magnetic Tests.—Determinations of the dip and horizontal intensity have been made with the Kew instruments in different parts of the laboratory, and of the horizontal intensity with two other types of magnetometer. The values obtained showed a very satisfactory agreement, and were in all cases verified by the local and bifilar variometers. A preliminary magnetic survey with the portable variometers, has been made of all the laboratories in which experiments affected by the horizontal intensity are carried on. The results have been of great utility, and show that the precautions taken in erecting parts of the building with copper pipes and heating apparatus were by no means unnecessary, and might even have been extended with advantage to the elementary laboratories. It was also found that the disposition of the motors and machinery at the other end of the building was such as to produce a magnetic disturbance scarcely appreciable for most purposes in the portions devoted to delicate work.

A complete set of apparatus for testing the magnetic quality of iron and steel by various methods has been provided.

The collection of apparatus in Acoustics, Optics and Heat is on a corresponding scale with the electrical equipment, and includes many fine and valuable instruments such as a six inch Rowland grating with mountings and accessories by Brashear, a complete set of spectrum and Crookes' Tubes by Geissler; a large four prism spectroscope and spectrophotometer by Schmidt and Haenack; a Geneva spectrometer with a quartz train; a Victor Laing spectrometer; a Landolt polarimeter and accessories; a set of electrical thermometers reading to .018 Fah., and now used for determining soil temperatures, and two Boy's microradiometers.

Amongst the special apparatus may be mentioned a set of Ewing's seismographs on which records of two earthquakes have already been obtained; a pair of Darwin mirrors and accessories for measuring small tilting movements of the earth; a standard Rieffler clock; a Geneva comparator and standards of length; a set of mercury and mechanical pumps; and a set of mechanical models from the Engineering Laboratory and Instrument Company at Cambridge.

A complete catalogue of the apparatus in the laboratory has been made, and it is intended to publish a short catalogue of the more special instruments, which will be of use to outside students and experimentalists who may wish to know what facilities the laboratory offers for any particular line of Research.



Macdonald Chemistry and Mining Building.

Macdonald Chemistry and Mining Building.

In September last the Chemical work was transferred to the new building, where admirable facilities are afforded for study and research in the various departments of Chemistry. The building is spacious, admirably lighted, and ventilated by means of electric fans, one placed in the basement and two in the attic. The electric current for these, as well as for lighting purposes, etc., is obtained from the Engineering Building. The rooms throughout are heated by hot water, and the fresh air introduced into the building is heated by passing over steam coils. The principal laboratories and preparation rooms are abundantly supplied with distilled water brought by tin pipes from a tank in the attic.

The main lecture theatre, extending through two storeys, is entered from the ground floor, and seats nearly 250 students. The acoustic properties of the room have proved excellent. The lecture-table is supplied with coal-gas, oxygen and hydrogen, electricity, water, vacuum, down-draught, etc., and can be well seen from all parts of the room.

Besides the main lecture theatre there are three smaller class-rooms, accommodating from 40 to 60 students each.

The three principal laboratories have each a floor-space of about 2,400 square feet, and together have accommodation for nearly two hundred students working at a time. They are lighted on three sides, and have ample hood space. One is intended for beginners, and the others for more advanced work, more particularly in qualitative and quantitative analysis. In connection with each of the main laboratories is a balance-room, equipped with balances by several of the best makers.

Physical Chemistry is provided for in a special laboratory, nearly 30 by 40 feet, lighted from the north, and supplied with electricity, steam, vacuum pumps, etc. The equipment of this department consists of the apparatus necessary for the determination of the specific gravities of solutions, of the depression of freezing point, and the rise of boiling point, of the densities of gases and vapours. There are constant temperature baths for accurate measurement of solubilities, Kohlrausch's apparatus for determining the electrical conductivity of solutions, and the apparatus necessary for measuring the electromotive forces generated between metals and their solutions, and in voltaic cells generally. There are also calorimeters for measuring the heat effects produced in chemical reactions. There is on the same floor an optical room furnished with refractometers for measuring the refractive indices of solutions, goniometers, polariscopes and spectroscopes. Other forms of apparatus will be added as required for research work.

Immediately adjoining the laboratory of Physical Chemistry is the Photographic department, supplied with two dark rooms, arranged on the maze system, and supplied with the necessary appliances for al ordinary photographic work, including an enlarging camera. Apparatus for micro-photography will shortly be added to the equipment.

The laboratory for gas analysis has a northern exposure, and is fitted with a large tank, to contain water at the temperature of the room for use in the measurement of gases. The tables are arranged for work with mercury, and the laboratory is supplied with the apparatus of Hempel, Dittmar, Orsat, Elliot, and others. It contains also Fleuss, Boltwood and Töpler pumps for providing high vacua.

The laboratory for electrolytic analysis is supplied with accumulators, thermopile, platinum electrodes, rheostats, ammeters, voltmeters, etc.

Another room is shortly to be equipped with electric furnaces and other appliances for electro-chemical work.

The organic department comprises a laboratory for preparations and research, a combustion room for analysis, a dark room for polariscope and saccharimeter work, and a lecture room. The laboratory is fitted with all the necessary apparatus for organic research—special hoods for work with poisonous gases, regulating ovens for digesting and drying at various temperatures, filter presses for the extraction of raw materials, and various forms of apparatus for distillation in vacuo. The dark room is equipped with polariscopes and saccharimeters for sugar work. And there is a large supply of the necessary organic chemicals, which are supplied free of charge to students engaged in routine or research work in this department.

The laboratory for determinative mineralogy has places for 28 students, and is supplied with abundant material for practical work. It adjoins the lecture-room, in which the lectures on advanced mineralogy are delivered. The mineralogical department is also provided with suitable machinery, run by electricity, for cutting and polishing minerals.

The Library contains a valuable collection of the most recent English, French and German books, and sets of various journals and transactions, including the Berichte der Deutschen Chemischen Gesellschaft, Journal für praktische Chemie, Chemisches Central-blatt, Fresenius Zeitschrift für Analytische Chemie, Annales de Chimie et de Physique, Journal of the Chemical Society, Chemical News, Mineralogical Magazine, Mineralogische und Petrographische Mittheilungen, etc. The library is open to students under such restrictions as are necessary to prevent damage or loss of books.

The rooms for allied purposes have, as far as possible, been grouped together on the same floor, and there is a hydraulic lift running from the basement to the attic. The offices and principal laboratories and supply rooms are also connected by a system of telephones. The building is practically fire-proof.

Botanical Laboratories.

The Botanical Laboratories occupy the upper floor of the central Arts building.

The laboratory for general Morphology provides table accommodation for fifty students, and is equipped with all the necessary appliances for the practical study of plants, either fresh or dry.

In connection with this laboratory, a large collection of dried plants is maintained, from which material is drawn for practical work.

Each student is supplied with a dissecting microscope, which he is required to return in good order at the close of the session.

The laboratories for special Morphology at present afford accommodation for twenty-four students. Each table is provided with a complete outfit of instruments and reagents. Provision is also made for accurate micrometric work, and for the production of accurate drawings by means of the camera lucida and Leitz's drawing instrument. More special instruments, including polariscope, spectroscope and photographic apparatus, afford opportunity for detailed studies in these several directions.

Ample provision for material of all kinds is found in the resources of the Botanic Garden, and in a large supply of stock preparations.

An investigator's table held by the University at the Biological Laboratory, Wood's Holl, Massachusetts, is available for such students as may successfully complete the advanced course of the third and fourth years.

Botanic Garden.

The Botanic Garden occupies a commanding situation at the summit of the Cote des Neiges Hill, distant from the College about one and one-half miles, and comprises an area of about nine acres.

The conservatories embrace a continuous series of houses having a total ground area of 4,600 square feet. They include a camellia house, 20 x 60 feet; a mixed stove, 20 x 80 feet; a greenhouse, 20 x 60 feet; and an Australian house, 20 x 30 feet.

The collection comprises an important and somewhat extensive representation of Australasian plants, and type-forms of vegetation from various parts of the world.

During the winter, material for practical study is provided in large quantity to meet the requirements of the College, and of such of the City schools as may have acquired special privileges in this respect.

Students are admitted to the garden and allowed the use of material for practical study, under special conditions. For this purpose, students' tickets are issued at the opening of the session to all those taking the course in Botany.

The public are admitted to the garden without charge, every day, except Sunday.

Zoological Laboratory.

The Zoological Laboratory which is being largely extended, is situated in the uppermost floor of the Law Building (East Wing of McGill College).

Accommodation is provided for a class of 80 students.

Dissecting trays, simple and compound microscopes, reasonable quantities of the ordinary reagents and of glass, are provided by the Laboratory.

The Laboratory is provided with several large tanks, in which the commonest species of the local fauna can be studied in the living condition, and so far as possible practical work is done on fresh specimens of species inhabiting the vicinity of Montreal.

For embryological work a rocking microtome of the most improved model, a thermostat and an incubator have been purchased from the Cambridge Scientific Instrument Company.

Petrographical Laboratory.

The Petrographical Laboratory, containing the chief rock collections of the University, is situated in the Macdonald Chemistry and Mining Building, and is arranged for the use of Honour and Graduate students. It is provided with a number of petrographical microscopes by Seibert and Crouch, as well as with models, sets of thin sections, electro-magnets, heavy solutions, etc., for petrographical work.

For purposes of study and comparison, in connection with advanced work and petrographical investigation, Dr. Adams' extensive private collection of rocks and thin sections is available.

Observatory.

Latitude, N. 45° 30′ 17″. Longitude, 4° 54′ 18.67″.

Height above sea level 187 ft.

Meteorological observations are made every fourth hour, beginning at 3 h. 0 m. Eastern standard time; also at 8 h. 0 m.; 20 h. 0 m.;

independent series of bi-hourly temperature observations are also made. (This series will shortly be replaced by an automatic temperature record by means of the Callendar recorder.) The principal instruments employed are two standard mercurial barometers; one Richard Barograph ; one Kew standard thermometer ; two Pastorelli thermometers; one maximum thermometer; one minimum thermometer; one set of six self-recording thermometers, with controlling clock, battery, etc.; two anemometers; one wind vane; one anemograph with battery, etc.; one sunshine recorder; one rain-band spectroscope and one rain gauge; two Callendar recording thermometers.

The Anemometer and Vane are on the summit of Mount Royal, at a point about three-quarters of a mile north-west of the Observatory. They are 57 feet above the surface of the ground and 810 feet above sea level.

Soil temperatures are observed, in co-operation with the Physical Laboratory, by means of platinum thermometers at depths ranging from one inch to nine feet.

The astronomical equipment consists of:—The Blackman Telescope (6¼ in.); a photoheliograph (4½ in.); a 3¼ in. transit with striding level, etc.; a prismatic (8 cm.) transit instrument also arranged as a zenith telescope; a 2 in. transit in the prime vertical; two collimating telescopes; one sidereal clock; one mean time clock; one sidereal chronometer; one mean time chronometer; one chronograph; batteries, telegraph lines, and sundry minor instruments.

Observations for clock errors are made on nearly every clear night. Time exchanges are regularly made with the Toronto observatory. Time signals are distributed throughout the city by means of the noon time-ball, continuous clock-signals, and the fire-alarm bells; and to the country, through the telegraph lines.

The longitude of the Observatory was determined in 1892 by direct telegraphic connection with Greenwich, with exchange of observers and instruments. The position is believed to be the most accurately determined in America.

British School of Classical Studies at Athens.—This University is a contributor to the support of the above School, which affords facilities for archaeological and classical investigation and study in Greece. Graduates in Arts of McGill University are accordingly entitled to special privileges and advantages as regards tuition in the School.

Affiliation to Oxford and Cambridge.—Statutes have recently been passed, by the Universities of Oxford and Cambridge, the effect of which will be to enable qualified students of McGill University who may wish to pursue their studies at Oxford or Cambridge, to complete their curriculum at either of these centres on a shortened term of residence.

SUMMER CLASSES.

It has been decided to institute annually, during the months of May and June, a series of SUMMER CLASSES, intended mainly, in the first instance, to meet the requirements of students in the first two years of their course. The subjects offered are English, Latin, Greek, Mathematics, French and German. A fee of ten dollars will be exigible for each course; or students may compound for any four courses by payment of an inclusive fee of twenty-five dollars.

Part Second.

Sir J. W. Dawson, LL.D., Emeritus Principal, and Emeritus Professor in the Faculty of Arts.

I. OFFICERS OF INSTRUCTION.

Professors.

W. Peterson, M.A., LL.D., Principal, and Hiram Mills Professor of Classics.

Alexander Johnson, M.A., LL.D., D.C.L., Vice-Principal, Dean of the Faculty of Arts, and Redpath Professor of Mathematics.

Rev. J. Clark Murray, LL.D., Frothingham Professor of Mental and Moral Philosophy.

Bernard J. Harrington, M.A., Ph.D., LL.D., Greenshields Professor of Chemistry and Mineralogy.

Charles E. Moyse, B.A., Molson Professor of the English Language and Literature.

D. P. Penhallow, B.Sc., M.A.Sc., Professor of Botany.

Rev. Daniel Coussirat, B.A., D.D., O.A., Professor of Hebrew and Oriental Literature.

John Cox, M.A., Macdonald Professor of Physics.

A. Judson Eaton, M.A., Ph.D., Associate Professor of Classics.

Frank D. Adams, M.A.Sc., Ph.D., Logan Professor of Geology and Palaeontology.

C. W. Colby, M.A., Ph.D., Macdonald Professor of History ("Kingsford" Chair).

Frank Carter, M.A., Professor of Classics.

Ernest William MacBride, M.A., B.Sc., Professor of Zoology.

J. Wallace Walker, M.A., Ph.D., Macdonald Professor of Chemistry.

E. Rutherford, M.A., Macdonald Professor of Physics.

Lecturers.

Paul T. Lafleur, M.A., Lecturer in Logic and English.

Leigh R. Gregor, B.A., Ph.D., Lecturer in Modern Languages.

Maxime Ingres, Lecturer in French.

(*The above Professors and Lecturers constitute the Faculty.*)

C. H. McLeod, Ma.E., Superintendent of the Observatory.
Nevil Norton Evans, M.A.Sc., Lecturer in Chemistry.
Rev. H. M. Tory, M.A., Lecturer in Mathematics.
C. M. Derick, M.A., Lecturer in Botany.
Rev. J. L. Morin, M.A., Sessional Lecturer in French.
S. B. Slack, M.A., Lecturer in Classics.
H. N. Sanders, M.A., Sessional Lecturer in Classics and Sanskrit.
E. T. Lambert, B.A., Sessional Lecturer in Modern Languages.
F. H. Pitcher, B.A.Sc., Demonstrator in Physics.
Alex. Brodie, B.A.Sc., Demonstrator in Chemistry.
J. P. Stephen, Instructor in Elocution.
R. Tait McKenzie, B.A., M.D., Instructor in Physical Culture.
R. O. King, B.A.Sc., Demonstrator in Physics.
O. E. LeRoy, B.A., Demonstrator in Geology.
R. K. McClung, Demonstrator in Physics.
J. W. Fraser, B.A., Demonstrator in Physics.
F. S. Jackson, Demonstrator in Zoology.

II. COURSES OF LECTURES.

Classical Literature and History.

Professors:—W. Peterson, M.A., LL.D.
Frank Carter, M.A.
Associate Professor:—A. J. Eaton, M.A., Ph.D
Lecturers:—S. B. Slack, M.A.; H. N. Sanders, M.A.

In this department, the work of the first two years is divided mainly between exercise in Grammar and Composition and the reading of selected authors. The attention of the student is at the same time directed to the collateral subjects of History, Literature, Antiquities, and Geography, in connection with which various text-books are recommended, as specified below.

In the Third and Fourth Years (as also in the Honour Courses) the instruction takes more of the lecture form, and an attempt is made to give a connected view of the leading branches of ancient literature, and the most important phases of ancient life and thought.

Students may be examined on the whole of the work prescribed for each class, even though it may not have been overtaken in lecture.

Subjects are suggested for Summer Readings in the various branches of class work. Students are strongly recommended to undertake

these subjects during their long vacation, and credit will be given for them at an examination held in the first week of October.

Students are also recommended to devote some part of the vacation to the subjects set down under the heads of History and Literature, which will form part of the Sessional Examinations.

Greek.

Ordinary First Year.

1. In this class, besides a review of grammatical principles (Rutherford's Greek Grammar, Accidence), portions of some Greek authors—*e. g.*, XENOPHON, HOMER, HERODOTUS, LUCIAN and EURIPIDES—are read and explained.

For 1899-1900 the work will be Lysias, contra Eratosthenem (Whitton, Ginn & Co.); Homer, Iliad XXII. (Edwards, Pitt Press); Euripides, Troades (Tyrrell, Macmillan). For *Composition*, the manual used will be North & Hillard's Greek Prose Composition (Rivingtons); for *Translation at Sight*, written and oral, Turner's Latin and Greek Passages (Longmans).

History.—From B. C. 560 to 479, Cox's "Greeks and Persians" (Longmans' Epoch Series).

Four hours a week.

Second Year.

2. The work of the Second Year will be selected mainly from the Greek Dramatists, and from THUCYDIDES, PLATO or DEMOSTHENES.

Subjects for 1899-1900:—.

SUMMER READINGS.—Luciani Vera Historia (Jerram, Clarendon Press). Students are also recommended to work through some portion of Burnet's Greek Rudiments (Longmans).

SESSIONAL LECTURES.—Thucydides, "Rise of the Athenian Empire" (Colson, Macmillan), and "The Capture of Sphacteria" (Graves, Macmillan); Homer, Iliad VI. (Edwards, Pitt Press); Sophocles, Electra (Jebb, Rivingtons, or Campbell & Abbott, Clarendon Press). The practice of *Composition and Translation at Sight* will be continued as before; North and Hillard's Greek Prose Composition (Rivingtons), and Jerram's Anglice Reddenda (First Series).

HISTORY.—The Athenian Supremacy; Cox's "Athenian Empire" (Longmans' Epoch Series). with Abbott's "Pericles" (Putnam).

LITERATURE.—Outlines as contained in Jebb's Primer of Greek Literature, pp. 1-100.

Four hours a week.

The following books are recommended for general use during the first two years of the course:—Jebb's Introduction to Homer (Maclehose); Jebb's Primer of Greek Literature, supplemented by readings in Murray, Jevons or Mahaffy: Gow's Companion to School Classics (in part); Oman's History of Greece (Longmans); Mahaffy's Primer

of Greek Antiquities; and Tozer's Primer of Classical Geography (Macmillan). Rutherford's Greek Grammar (Accidence and Syntax); or Sonnenschein's (Parallel Grammar Series), or Burnet's Greek Rudiments.

Students should provide themselves also with Kiepert's Atlas Antiquus.

Third Year.

3. Subjects for 1899-1900:—

SUMMER READINGS.—Sophocles, Antigone (Jebb, Pitt Press, or Campbell & Abbott, Clarendon Press).

SESSIONAL LECTURES.—Demosthenes, Private Orations (Paley & Sandys, Vol. I. [in part], Cambridge Press); Aristophanes, Plutus (Green, Pitt Press). For practice in *Composition*, Sidgwick's Introduction to Greek Prose Composition will be used; for *Translation at Sight*, Tod and Longworth, Passages for Unseen Translation.

HISTORY.—The Peloponnesian War and Outlines to the Battle of Chaeronea (Oman's History, with Sankey's "Spartan and Theban Supremacies," Longmans).

LITERATURE.—The origin and growth of the Drama. The Historians and Orators (Murray's Ancient Greek Literature, Heinemann).

Two hours a week.

Fourth Year.

4. Subjects for 1899-1900:—

SUMMER READINGS.—Merriam's "The Phaeacians of Homer" (Harper's).

SESSIONAL LECTURES.—Plato, Republic II., III., IV to 435A (Warren, Macmillan); Aeschylus, Agamemnon (Sidgwick, Clarendon Press). *Composition* and *Translation at Sight* as in the Third Year.

HISTORY and LITERATURE.—The Constitutional History of Athens, with a general study of Greek Antiquities and Literature.

Two hours a week.

The following books are recommended for general use: Gow's Companion to School Classics (Macmillan); Jebb's Growth and Influence of Classical Greek Poetry (Macmillan); Campbell's Guide to Greek Tragedy (Percival); Abbott's Pericles (Putnam); Haigh's The Attic Theatre (Clarendon Press); Cornish's Concise Dictionary of Greek and Roman Antiquities (Murray): Jevons' or Mahaffy's or Murray's History of Greek Literature; Kiepert's Manual of Ancient Geography (Macmillan); Greenidge's Constitutional History. King & Cookson's Comparative Grammar (Clarendon Press).

Honours. Third and Fourth Years.

5. The work of the Honours Classes in Greek has been so arranged as to admit of separate courses of lectures being given, with illustrative readings, along certain main lines of literary study, in addition to supplementary work as provided for below. In 1899-1900, the

Lecture Courses will be as under, the books selected for class reading being specified under each separate head:—

A. Greek Epic Poetry: HOMER, Odyssey XIX.-XXIII. (Merry, Clarendon Press).

B. Greek History: THUCYDIDES, VII (Marchant, Macmillan).

C. Greek Drama: SOPHOCLES, Oedipus Coloneus (Jebb, Cambridge Press).

Three hours a week.

Translation at sight.—Fox & Bromley's Models and Exercises (Clarendon Press).

Prose Composition.—Sidgwick, and from Dictation.

Seminary Work.—Essays and Lectures on History, Literature, Comparative Philology and Ancient Philosophy.

Private Reading.—Plato, Purves's Selections, pp. 1-112 (Clarendon Press); Thucydides, VI. (Marchant, Macmillan); Sopnocles, Antigone (Jebb, Pitt Press; or Campbell & Abbott, Clarendon Press). **Third Year.**

In *History* the examination will be directed to testing a general knowledge of the course of Greek History to the death of Alexander, and a more minute knowledge of the development of the Athenian Constitution and the period of Athenian Supremacy. In *Literature*, a general knowledge will be expected of the course of Greek literature, and a more minute knowledge of the lives and writings of the authors prescribed.

6. *Private Readings.*—SOPHOCLES, Trachiniae (Jebb, Cambridge Press); HERODOTUS, Book VII. (Butler, Macmillan); DEMOSTHENES, in Leptinem (Sandys', Cambridge Press); ARISTOPHANES, Wasps, (Starkie, Macmillan); Attic Orators (Jebb's Selections, Macmillan); ARISTOTLE, Ethics I., II., and X. (Bywater, Oxford); THEOCRITUS, I., II., IV., XI., XV. (Kynaston, Clarendon Press). **Fourth Year.**

History, Literature and Antiquities.—Oman, Symonds, Murray; Jebb's Growth and Influence of Classical Greek Poetry; Leaf's Companion to the Iliad; Butcher's Aspects of the Greek Genius; Mahaffy's Social Life in Greece; Jebb's Attic Orators.

Grammar and Philology.—Goodwin's Greek Moods and Tenses, and Giles's Short Manual of Philology (Macmillan); Monro's Homeric Grammar (Clarendon Press).

Latin.

Ordinary First Year.

1. In this class, besides a general review of grammatical principles (Sonnenschein's Latin Grammar; Parallel Grammar series)—portions of some Latin author, such as OVID, TIBULLUS, LIVY, SALLUST, VIRGIL, HORACE or CICERO—are read and explained.

For 1899-1900 the subjects will be OVID Tristia I. (Owen, Clarendon Press); CICERO, Pro Roscio Amerino (Stock, Clarendon Press); VIRGIL, Aeneid IX. (Sidgwick, Pitt Press). For practice in *Composition*, both written and oral, the text-book in use during the first two years will be North and Hillard's Latin Prose Composition (Rivingtons); and for *Translation at Sight*, Turner's Latin and Greek Passages (Longmans). *History*.—Carthaginian Wars, B. C., 263-146; Shuckburgh's History of Rome, or "Rome and Carthage" (Longmans' Epoch Series).

Four hours a week.

Second Year.

2. For 1899-1900 the subjects will be:—

SUMMER READINGS.—VIRGIL, Georgics I. (Sidgwick).

Students are also recommended to continue the practice of Prose Composition (North and Hillard).

SESSIONAL LECTURES.—LIVY IX. (Stevenson, Pitt Press); HORACE Odes, as in "Historical and Political Odes," by Church (Blackie and Son); QUINTILIAN X., ch. I., sections 37-131, being Quintilian's Review of Ancient Literature (Peterson, Clarendon Press, smaller edition). *Composition and Translation at Sight*, North & Hillard's Latin Prose Composition (Rivingtons); and Jerram's Anglice Reddenda (First Series).

HISTORY.—The last Century of the Republic, B. C., 133-31; as in Beesly's "The Gracchi, Marius and Sulla" (Longmans' Epoch Series), and "The Roman Triumvirates" (Merivale, Longmans' Epoch Series.)

LITERATURE.—As in Quintilian X., i., §§ 85-131 (as above).

Four hours a week.

The following books are recommended for general use during the first two years of the course: Shuckburgh's History of Rome (Macmillan); Strachan-Davidson's CICERO, and Warde-Fowler's CÆSAR (Putnam); Wilkins' Primer of Roman Literature, Wilkins' Primer of Roman Antiquities; Latin Grammar, Gildersleeve and Lodge.

Students should provide themselves also with Kiepert's Atlas Antiquus.

Third Year.

3. Subjects for 1899-1900.

SUMMER READINGS.—VIRGIL, Aeneid VI. (Sidgwick, Pitt Press).

SESSIONAL LECTURES.—TACITUS, Annals I. (Furneaux, Clarendon Press); PLAUTUS, Trinummus (Gray, Pitt Press); OVID, Fasti VI. (Sidgwick, Pitt Press).

The text-book for *Composition* will be Sargeant's Easy Latin Prose Exercises (Clarendon Press); and for *Translation at Sight*, Tod & Longworth, Passages for Unseen Translation (Longmans).

HISTORY.—The Making of Rome (to 300 B.C.), as in Ihne's "Early Rome" (Longmans' Epoch Series), and Shuckburgh's History.

LITERATURE.—Mackail's Primer of Roman Literature.

Two hours a week.

4. Subjects for 1899-1900. **Fourth Year.**

SUMMER READINGS.—HORACE, Epistles II., with De Arte Poetica (Wilkins, Macmillan).

SESSIONAL LECTURES.—CICERO, Philippics v. and vii. (King, Clarendon Press, smaller edition); TACITUS, Histories II. (Godley, Macmillan); LUCRETIUS I., II. III. (Selections) (Lee, Macmillan).

HISTORY.—Capes' "Early Roman Empire" (Longmans' Epoch Series); or Bury's History (John Murray), down to Domitian.

Two hours a week.

NOTE.—The following books are recommended for general use: Gow's Companion to School Classics (Macmillan); Mackail's Latin Literature (Murray); How & Leigh's History of Rome (Longmans); Pelham's Outlines of Roman History (Percival); Capes' Early Roman Empire (Longmans' Epoch Series); Cornish's Concise Dictionary of Greek and Roman Antiquities (Murray); Kiepert's Manual of Ancient Geography (Macmillan); Bennett's Appendix to Latin Grammar.

Honours Third and Fourth Years.

5. As in Greek, the work of the Honours Classes in Latin has been so arranged as to admit of separate courses of lectures being given, with illustrative readings, along certain main lines of literary study, in addition to supplementary work as provided for below. In 1899-1900, the Lecture Courses will be as under, the books selected for class reading being specified under each separate head:—

A. Latin Satire: JUVENAL (Duff, Pitt Press) and PERSIUS (Conington, Clarendon Press).

B. Latin Oratory: CICERO, Pro Cluentio (Peterson, Macmillan), with CICERO, Brutus (Kellogg, Ginn & Co.).

C. Latin Lyric and Elegiac Poetry; CATULLUS (Simpson, Macmillan; TIBULLUS and PROPERTIUS (Ramsay, Clarendon Press).

Translation at Sight.—FOX & Bromley's Models and Exercises (Clarendon Press). *Prose Composition.*—Selected Passages.

Seminary Work.—Essays and Lectures on History, Literature, Comparative Philology and Ancient Philosophy.

Private Reading—HORACE, Epistles I (Wilkins, Macmillan); CICERO, Pro Plancio (Auden, Macmillan); VIRGIL, Aeneid V.. (Sidgwick, Pitt Press); SALLUST, Catiline (Cook, Macmillan); CICERO, Select Letters (Abbott, Ginn & Co.). **Third Year**

History.—A general knowledge of Roman History to the end of the First Century A. D., and a more minute knowledge of the period from B. C. 146 to the Death of Augustus.

Literature.—A general knowledge will be expected of the course of Roman Literature, and a more minute knowledge of the lives and writings of the authors prescribed.

Fourth Year.

6. *Private Reading.*—PLAUTUS, Rudens (Sonnenschein, Clarendon Press); CICERO, Tusculan Disputations I., II.; HORACE, Odes I, and II. (Gow, Pitt Press); VIRGIL, Aeneid X-XII. (Sidgwick, Pitt Press); TACITUS, Annals III. (Furneaux, Clarendon Press); QUINTILIAN, Book X, (Peterson, Clarendon Press).

History, Literature, and Antiquities.—How & Leigh's History of Rome (Longmans); Tyrrell's Latin Poetry; Students' Companion to Latin Authors (Middleton & Mills, Macmillan).

Grammar and Philology.—Lindsay's Short Historical Latin Grammar (Clarendon Press) and Giles's Short Manual of Philology (Macmillan); Lindsay's Textual Emendation (Macmillan).

Sanskrit.

Lecturer:—Henry Nevill Sanders, M.A.

It has been determined to commence a course of instruction in Elementary Sanskrit, which shall aim at a thorough grounding in the rudiments of the language necessary to the attainment of facility in translation, and indispensable to the study of comparative grammar. While the course is intended to provide especially for those who contemplate equipping themselves as teachers of Latin and Greek, to whom a knowledge of Sanskrit is invaluable, if not indispensable, the opportunity for a systematic and at the same time not laborious elementary training in Sanskrit is one which will present itself favorably to the attention of the student of Classics. The classes are intended mainly for those who have passed the Intermediate Examinations, but students entering the second year after obtaining a first class in Greek or Latin may attend, if specially recommended. It ought reasonably to be expected that a three years' course in Sanskrit would develop an acquaintance with the language such as it is the lot of few in Canada to enjoy.

At the commencement of the course in September, Perry's Sanskrit Primer (Ginn & Co.) will form the basis of instruction with translation of easy sentences into English and Sanskrit. At the same time Students will provide themselves with Whitney's Sanskrit Grammar. When sufficient progress has been made to warrant the translation of continuous pieces, Lanman's Sanskrit Reader (Ginn & Co.) will be taken up, commencing with the Tale of Nala. Brief studies in the Literature will from time to time be discussed, and the student's attention will be throughout directed to the more certain etymologies.

A prize of $100 has been generously offered by Mr. Caulfield of Toronto to encourage the study of Sanskrit. This will be awarded in April, 1900, to the Undergraduate Student of the Second or Third Years who in class work and the examinations has shown the greatest proficiency. Other prizes, it is hoped, will be announced later according as the attendance on the course warrants their publication.

English Language and Literature.

Professor:—Chas. E. Moyse, B.A.

Lecturer in Rhetoric and English:—P. T. Lafleur, M.A.

Ordinary

First Year.

1. A. English Literature and Composition.—A course of lectures, chiefly synthetical, on the principles of English composition, with special reference to the use of words and the construction of sentences and paragraphs. Regular essays are required of all students. One hour a week.

Studies of authors and masterpieces of English literature in a course of about twenty-five lectures. For 1899-1900 the subject will be the leading prose Essayists of England from Bacon to Goldsmith. The treatment is critical rather than biographical, the intention being to explain the origin and growth of essay writing as a characteristic form of modern literary expression, together with the causes which have assisted in permanently establishing its popularity. Incidentally, this course proves ancillary to (*A*) through the opportunity which it offers of discussing analytically the style of the authors under examination. One hour a week.

B. European History (Dr. Colby).—Twenty-five lectures will be given on the outlines of Classical, Mediaeval and Modern History, including Colonial expansion since the 15th century. The design of this course is less to present a mass of facts than to illustrate the chief feature of racial, political and social progress. Short historical papers will be required at regular intervals from each student. One hour a week.

Second Year.

2. (A) History of Elizabethan Literature.—The social and literary conditions of Elizabethan England will be noticed, and illustrated by a brief study of the life and works of Sir Philip Sidney. Special attention will be given to Spenser's minor poems, and the general plan and significance of The Faerie Queene will be indicated. A sketch of the development of the English drama will follow, with a short account of the predecessors of Shakspere. The remainder of the course will be devoted to an introduction to Shaksperean study and criticism. Students are recommended to read as many of the plays as they can, especially Love's Labour's Lost, A Midsummer Night's Dream, Romeo and Juliet, Henry V., As You Like It, Hamlet, King Lear, and The Tempest. Lantern slides will be shown giving portraits of the chief personages, and illustrating the manners and customs of the time.

Fortnightly essays will be required on subjects set in connection with the lectures, and will be taken into account in determining the standing of students at the end of the session.

Two hours a week.

Second Year.

2 (B.) HISTORY OF THE ENGLISH LANGUAGE.—Lectures will be given on the origin of English and its relation to other languages. While the method of treatment will be historical rather than philological, the course will aim at making the student acquainted with the leading features of English at the main stages of its development. One hour a week.

The Second Year courses of lectures will be delivered during the Session 1899-1900, *by J. W. Cunliffe, D. Lit.* (*Lond.*).

Third Year.

3. (A.) A course on MIDDLE ENGLISH. CHAUCER'S Prologue to the Canterbury Tales (Morris and Skeat, Clarendon Press) will be read in class, and used to illustrate the leading features of the development of the English Language. The life and thought of Chaucer's day will be touched on, and the social aspects of England illustrated by lantern slides. (To be taken with 3B.) One hour a week.

Third Year.

3 (B.) A course on RHETORIC. Text-Book; GENUNG, Rhetoric. (To be taken with 3 A.) One hour a week.

Fourth Year.

4. A course on the LEADING POETS OF THE NINETEENTH CENTURY. The chief aspects of the French Revolution will be considered, and Republican feeling in England illustrated, chiefly from the works of WORDSWORTH, COLERIDGE and SOUTHEY. The indirect revolutionary poets BYRON and SHELLEY will then be considered, and their typical poems, together with those of the poets already mentioned, critically examined. The remainder of the course will be given to SCOTT, KEATS, TENNYSON, BROWNING and SWINBURNE.—*In the course for* 1899-1900, *special attention will be given to Tennyson and Browning.* One hour a week.

The following poems have been selected for private reading. A paper will be set on them at the sessional examination of the Fourth Year:

WORDSWORTH:—The Scholars of the Village School of——; Two April Mornings; The Fountain; The Peak of Weatherlam, in the Prelude—("One summer evening (led by he) I found," Book I.); Lucy Poems; Earth has not anything——; Hart-leap Well; Tables Turned; Lines written in early spring; To my Sister; Excursion—The Vision in the Skies. (So was he lifted gently from the ground) Book. II.; The Child and the Shell, (I have seen a curious child), (Book IV.) Laodamia; It is a beauteous evening; The world is too much with us; Scorn not the Sonnet; Milton, thou shouldst——; Daffodils; The Yarrow Poems.

COLERIDGE:—Dejection; Ode to France; Lines to a Gentleman, composed on the Night after his Recitation of a Poem on the Growth

of an Individual Mind; Love; Youth and Age; Fancy in Nubibus; Christabel; Hymn before sunrise in Vale of Chamouni.

SOUTHEY:—Battle of Blenheim; Inch Cape Rock; Lord William; Bishop Bruno; Well of St. Keyne.

SCOTT:—Lady of the Lake; Wild Huntsman; Fire King.

BYRON:—A Distant View of Harrow on the Hill; Childish Recollections; Manfred; Childe Harold, Canto I.; Cain.

KEATS:—Hyperion; Ode to a Grecian Urn; Chapman's Homer (Lines, etc.).

SHELLEY:—Ode to the West Wind; The Cloud; The Skylark; Alastor; Ozymandias; Adonais; Hellas Choruses.

TENNYSON:—The Poet; The Princess; In Memoriam.

BROWNING:—Christmas Eve and Easter Day; Saul; Johannes Agricola; Pictor Ignotus; Fra Lippo Lippi; Andrea del Sarto; The Bishop orders his Tomb at Saint Praxed's Church; Bishop Blougram's Apology.

Honours: Fourth Year.

MŒSO-GOTHIC. The course on Moeso-Gothic is intended to open the way to the comparative study of allied Teutonic languages. Particular attention will be given to the phonological relations of Moeso-Gothic and Anglo-Saxon. *Text-Book:* The Gospel of St. Mark (Skeat, Clarendon Press). One hour a week.

Third Year.

ANGLO-SAXON. An elementary course on Anglo-Saxon. The object of the course is to make the student familiar with the grammar of the language, and to enable him to read easy passages at sight. Leading features of Teutonic philology will be noticed when the text calls for them. Exercises in Anglo-Saxon scansion will form a part of the regular work of the class. *Text-Book:* SWEET, Anglo-Saxon Primer and Anglo-Saxon Reader, Extt. IV.-VIII., and the pieces in verse. Two hours a week.

Fourth Year.

7. ANGLO-SAXON, BEOWULF. The text will be read in class and illustrated by notes on origins, philology, and verbal emendations. *Text-Book:* Harrison and Sharp (Ginn). One hour a week.

Third Year.

8. EARLY AND MIDDLE ENGLISH. The course is intended to give a knowledge of dialectal English, and to illustrate the changes which the language has undergone. *Text-Books:* MORRIS and SKEAT's Specimens, Part II., extt. I.-IX. CHAUCER, Parlement of Foules. (Skeat, Minor poems of Chaucer, Clarendon Press.) One hour a week.

Fourth Year.

EARLY ENGLISH. The course is a continuation of 8. *Text-Book:* MORRIS and SKEAT's Specimens, Part II., Extt. X.-XX. One hour a week.

Third Year. 10. ELIZABETHAN AND EARLY STUART PERIODS. The general influences visible in the literature of the periods will be noticed by way of introduction to a critical examination of the following works which have been selected for private study: SPENSER, Shepheards Calendar (Herford, Macmillan); Faerie Queene, Bk. I. (Percival, Macmillan); SIDNEY, An Apology for Poetry (Cook); MILTON, Shorter English Poems (Browne, Clarendon Press); and Areopagitica (Hales). One hour a week.

Fourth Year. 11. SHAKSPERE. The social and literary conditions of Elizabethan England will be noticed, and the characteristics of the pre-Shaksperian drama specially illustrated. The following plays have been selected for special criticism and private study: Love's Labour's Lost (Rolfe); A Midsummer Night's Dream (Deighton, Macmillan); Hamlet (Deighton, Macmillan); and the Tempest (Deighton, Macmillan). One hour a week.

Third Year. 12. LATER STUART PERIOD. The method of 10 will be followed. The works selected for private study are: DRYDEN, Annus Mirabilis, Absalom and Achitophel, Part I., the Preface to the "Fables" (Globe Edition, or for Absolom and Achitophel, Dryden's Satires, ed. Collins, Macmillan). ADDISON, Essays on Paradise Lost and on the Imagination (Spectator, ed. Henry Morley, Routledge). One hour a week.

Fourth Year. 13. LATER STUART PERIOD. An introductory sketch of the critical and philosophical essayists in verse, leading up to a more minute examination of the following works of POPE, which have been selected for private study: Essay on Criticism (Churton Collins, Macmillan); Essay on Man (Morris, Macmillan). One hour a week.

Third Year. 14. PERIOD OF POPULAR INFLUENCE. Influence of the French Revolution. The influence of the French Revolution on contemporary English Literature will be discussed. The following poems have been selected for special criticism and private study: WORDSWORTH, Prelude (Moxon's edition or Dent's), and CAMPBELL, Pleasures of Hope. One hour a week.

Fourth Year. 15. MODERN POETS. An interpretation in detail of TENNYSON'S In Memoriam and a comparative criticism of other famous English poems of the same class. An outline of the growth of the Arthur Saga and a special examination of TENNYSON'S Idylls of the King. BROWNING, Christmas Eve and Easter Day.

In addition to the poems just mentioned, MILTON'S Lycidas, SHELLEY'S Adonais, and MATTHEW ARNOLD'S Thyrsis have been selected for private study. One hour a week.

Note.—**Honour** students of the Third Year will privately study the following works, and write an essay on some topic arising from them: BURKE, Reflections on the French Revolution; LESLIE STEPHEN, English Thought in the Eighteenth Century, Vol. II., chap. X., secs. V. to X. inclusive. The Essay will count in the awarding of honours.

Honour students of the Fourth Year will, in like manner, take the following: MORE, Utopia; MATTHEW ARNOLD, Essays in Criticism (the Second Series).

Readings from authors who do not find a place in the above courses will be given by Prof. Moyse on Saturdays at noon. The selections will be taken for the most part from writers of the present century. Attendance is voluntary.

Department of Modern Languages.

Lecturer:—Leigh R. Gregor, B.A., Ph.D.
Sessional Lecturer:—E. T. Lambert, B.A.

A.—French.

Lecturer:—M. Ingres, B.-ès-Lettres.
Sessional Lecturer:—J. L. Morin, M.A.

The earlier courses of instruction in French have been framed with the view of enabling the student to speak and write the language with facility and correctness. In the later courses, particular attention will be given to the style and substance of leading French writers, both in prose and verse, and also to the historical development of the French language and literature. Instruction will be of a twofold nature. On the one hand it will include an academic course of the usual character, on the other it will take cognizance of the fact that this University is situated in the midst of a French-speaking population, and will provide every student with the opportunity of learning to speak French fluently. The work of the First and Second Years is accordingly divided into two sections. In the Second Section the Natural Method alone is employed.

Sec. I. BERTENSHAW and JANAU'S Manual of French Composition (Longmans), together with the prose passages for translation into French appended thereto. The following texts will be read and studied: ABOUT, Le Roi des Montagnes (Heath & Co.); SANDEAU, Mademoiselle de la Seiglière (Heath & Co.); Episodes from GEORGE SAND'S François le Champi (Longmans); VICTOR HUGO, Ruy Blas (Heath & Co.); DAUDET, Trois Contes Choisis (Heath & Co.).

There will also be regular written exercises—dictation, translation, and composition.

Sec. 2. The following outline will indicate the character of this Section, in which the Natural Method and the French language are exclusively used. (*a*) The oral reproduction of stories by French writers of the present century, so selected as to bring out the national aspects of French life. In connection with this part of the work, words will be referred to groups and their formation noticed. (*b*) Biographical sketches of the leading writers of the present century, illustrated by typical selections from their works, which will be read by the class, and committed to memory. Points of grammar will be treated incidentally, and the elements of French prosody taught. A general outline of French literature from its origin to the present day will be given. (*c*) Private Reading, the amount and character of which will be determined by the requirements of the individual student. The following works may be taken as specimens of the literature chosen for the class. Deuxième livre d'Histoire de France, par Auge & Petit (ed. Larousse); Pages Choisies d'Alexandre Dumas (H. Parigot), ed. Colin; A. de Vigny, Servitude et Grandeur militaires; Augier, le Gendre de M. Poirier. Students are recommended to use Le Dictionnaire Larousse.

The examination for the students of affiliated colleges will include the whole of Section 1, and in addition the whole of the two following texts selected from Section 2: Augier, Le Gendre de Monsieur Poirier, Pages Choisies d'Alexandre Dumas.

Four hours weekly, two for each Section.

Second Year.

Sec. 1. An advanced Manual of French Composition and Syntax will be used in this course. The following texts will be read and studied: Loti, Pêcheur d'Islande (Rivington, Percival & Co.); Souvestre, Un Philosophe sous les Toits (Hachette & Co.); Victor Hugo, Les Misérables (abridged by Sumichrast, pub. by Heath & Co.); L'Aide de Camp Marbot, or Selections from the Mémoires du Général Baron de Marbot (Longmans).

There will be regular written exercises in composition and translation.

Sec. 2. The method used in this Section is the same as in Section 2 of the First Year, but the more advanced points of grammar will be treated, and in literature particular attention will be directed to characteristics of style. The history of the French Language and Literature from the origin to the 17th century will be treated more fully. Students are recommended to use Le Dictionnaire Larousse.

The following works may be taken as specimens of the reading chosen for the class: Pages choisies de Lesage (P. Morillot), ed. Colin; Pages choisies de Th. Gauthier (P. Sirven), ed. Colin;

VICTOR HUGO, Notre-Dame de Paris ; G. SAND, Le Marquis de Villemer. Histoire de France, par VICTOR DURUY, 1st volume.

The examination for the students of affiliated colleges will include the whole of Section 1, together with the whole of Pages Choisies de TH. GAUTHIER in Section 2.

Four hours weekly, two in each Section.

Third Year.

3. The form and origin of words will be treated more fully than in previous courses, and an outline of philology given. In the literary portion of the course the characteristics of the 17th and 18th centuries will be described. Biographical sketches of writers of these centuries will be given, and illustrated by typical selections from their works, which will be read in class and committed to memory. The following works, or portions thereof, of the same period have been chosen for private reading previous to their consideration by the class: VICTOR DURUY, Histoire de France, 2nd volume; B. DE ST. PIERRE, Paul et Virginie; CORNEILLE, Le Cid, Cinna; RACINE, Athalie, Andromaque; MOLIERE, Tartuffe, Le Bourgeois Gentilhomme. Furthermore selections will be read from the works of ROUSSEAU, VOLTAIRE, MME. DE SÉVIGNÉ, BOSSUET, PASCAL, etc.

There will be regular written exercises in composition and translation.

Two hours weekly.

Fourth Year.

4. Important historical changes of various kinds in the vocabulary of French will be noticed, and sentences presenting peculiar difficulties explained. A course on the literature of the 19th century will be given. The origin of the French language will be more fully treated, and French literature previous to Corneille read. Biographical sketches of leading writers of that period will be given, and typical selections from their works studied in detail. The course will include selections from the works of MONTAIGNE, DESCARTES, AMYOT, CALVIN, and other great writers of the same century.

There will be regular written exercises in composition and translation.

Two hours weekly.

Honours Third and Fourth Years.

5. This Honour Course is divided into three sections. The First includes the Historical Study of the French Language, the Second the History of French Literature, the Third French Composition and the Reading and Study of French Texts. The First and Second sections are taken up in alternate years, the Third annually. The Honours Course is regarded as a whole, students of the Third and Fourth years taking lectures together. The course of a Third Year student will include Section 1 or 2, together with Composition and as many of the texts prescribed below as it may appear advisable to

assign to that year. The course of a Fourth Year student will consist of the remainder of the prescribed studies. The French language alone will be used.

Philology 1899-1900. This course will deal with the historical development of the French language from its origin to the present day. There will be a few lectures at the outset on the principles of Phonetics. A brief account will be given of the Low Latin as found in *graffiti*, correspondence, grammarians' glossaries, etc., and as ascertained by tracing back old French words to their origin in accordance with known laws. The Old French Period will be treated with much more detail, and in this connection the oldest texts, Serments de Strasbourg, Cantilène de Sainte Eulalie, short portions of the Passio Christi, Vie de Saint Alexis, Vie de Saint Léger (KOSCHWITZ, Altfranzösisches Uebungsbuch), and longer extracts from the Chanson de Roland (GASTON PARIS), will be read and interpreted. Students will receive assistance in acquiring a fair reading knowledge of Old French subsequent to the Chanson. Provençal grammar will necessarily be referred to, and it may be possible to overtake the reading of Provençal texts (BARTSCH, Chrestomathie). The Grammar of the Modern French Period will be included as well, and will be shown to be the regular outcome of this long process of development. Students can use with advantage BOURCIEZ, Phonétique Française, Schwan's Altfranzösische Grammatik (revised by Berings), Horning's Grammar prefixed to his Chrestomathie. The larger grammars and lexicons (Meyer-Lübke, Körting, etc.), will be found in the University Library. Peculiarities of the Canadian dialect will also be noticed.

History of Literature 1900-1901. A general and comprehensive survey of French Literature from its origin to the present day. Students will use LINTILHAC's and LANSON's Histories of French Literature as text-books in order to prepare for lectures. They will furthermore be required to make constant reference to the numerous Monographs and Special Histories to be found in the Library. During the Session 1900-01 a detailed course will be given on the History of Dramatic Literature, with special reference to the influences which moulded it at its origin.

Three hours weekly.

Texts and Composition. Students will receive special instruction in the Art of Composition and the use of idiomatic French. They will be expected to write a limited number of French papers on literary and other subjects.

Students will find it necessary to read a considerable number of the following texts during their summer holidays, and are strongly recommended to make a beginning in the summer which precedes their Third Year's Course:

1899-1900. BOILEAU, L'Art Poétique, Satire sur la Noblesse; LA FONTAINE, Fables, (Books I, II and V); PASCAL, Lettres Provinciales (Lettres

IV-X); La Bruyere, Caractères (Chapters I, II, V, VIII) (éd. Hachette); Bossuet, Oraisons Funèbres sur Henriette-Marie de France et le Prince de Condé; De Retz, Mémoires (Selections); Madame de Sévigné, Lettres (Selections); Fénelon Sermon de l'Epiphanie, Lettre à l'Académie Française; Massillon Sermon sur le Petit Nombre des élus; Florian, Estelle et Némorin; Marivaux, Jeu de l'amour et du hasard; Lesage, Gil Blas (Selections); Beaumarchais, Le Figaro.

A list of modern texts approximately equal in extent to the foregoing will be subsequently announced. **1900-1901.**

One hour weekly.

B—German.

Lecturer:—Dr. Gregor.
Sessional Lecturer:—Mr. Lambert.

The ordinary Courses mainly keep practical ends in view. As far as possible they place the student at the German standpoint, so that he may study the language from within. Some time is devoted to colloquial exercises in the First and Second Courses; special attention is given to Literature in the Third and Fourth. Importance is attached to correct and expressive reading. Classic texts are carefully studied, from the æsthetic and critical as well as from the historical and linguistic points of view. A considerable amount of translation is done in class, and English-German exercises are supplemented by the translation of easy prose passages and the "retranslation" of texts. In the First and Second Years the course on grammar is taken mainly from a prescribed text-book. In the Third and Fourth Years certain points of grammar receive special treatment in connection with the study of texts.

First Year.

1. The Joynes-Meissner German Grammar (Heath & Co.); Uhland, Ballads and Romances (Macmillan & Co.); Hoffmann, Historische Erzählungen (Heath & Co.); Wildenbruch, Das edle Blut (Heath & Co.); Baumbach, Der Schwiegersohn (Heath & Co.); Schiller, Maria Stuart (Heath & Co.); a few well-known German poems will be committed to memory; dictation; prominence is given to written exercises.

Four hours a week.

Second Year.

2. The Joynes-Meissner German Grammar; Schiller, Die Jungfrau von Orleans (Heath & Co.), Das Lied von der Glocke (Holt & Co.); Nichols, Three German Tales (Holt & Co.); Lessing, Minna von Barnhelm (Cla endon Press); Freytag aus

dem Staate Friedrichs des Grossen (Heath & Co.), prominence is given to written exercises, which include, in addition to the English-German Exercises in the Grammar, prose passages for translation into German from HORNING's German Composition.

Four hours a week.

Third Year. 3. BENEDIX, Die Hochzeitsreise; HEINE, White's selections from his poems (Heath & Co.); LESSING, Nathan der Weise; Translation of prose passages from English into German; Notes on the great names of German Literature from the middle of the 18th Century to our own day.

Two hours a week.

Fourth Year. 4. SCHILLER, Wilhelm Tell (Macmillan & Co.); EICHENDORFF, Aus dem Leben eines Taugenichts (Heath & Co.); GOETHE, Götz von Berlichingen (Macmillan & Co.); Translation of prose passages from English into German; Notes on the great names of German Literature up to the middle of the 18th Century.

Two hours a week.

Honours. Lectures in the Courses for Honours are given entirely in the German Language. They reproduce and extend the main elements of the Ordinary Courses. In addition to this class of studies, an account is given of the development of the German Language. Students are encouraged to undertake independent work, to write German compositions on literary subjects of especial interest to themselves. In order to obtain Honours, candidates must also be capable of speaking German fluently.

Honour Students of the Third and Fourth years take lectures together. The order in which the following text-books are taken up is subject to re-arrangement :—

Third Year. 5*a*. A special study of GOETHE's Faust (Part I.); GOETHE, Leiden des jungen Werther; Selections from HERDER's Volkslieder; HAUPTMANN, Die versunkene Glocke; German Composition.

N.B.—The above constitutes the Additional course. See p. 18.

5*b*. LESSING, Emilia Galotti; Extracts from FREYTAG's Bilder aus der deutschen Vergangenheit; SCHILLER, Kabale und Liebe; GERSTÆCKER, Germelshausen; KLEIST, Kätchen von Heilbronn. History of German Literature from the beginning of the Second Classical Period to our own day (KLUGE); German essay on a literary subject.

Fourth Year. 6*a*. LESSING, Laokoon; GRILLPARZER, Sappho; SCHILLER, Die Braut von Messina; German Composition.

N.B.—The above constitutes the Additional course. See p. 18.

6b. GOETHE, Sessenheim (Heath & Co.); KLOPSTOCK, Messias (second canto), as well as selections from his odes; WIELAND, Oberon (Selections); SUDERMANN, Die Ehre; SCHEFFEL, Trompeter von Säkkingen, as well as certain portions of Ekkehard; Nibelungenlied (ZARNCKE); History of German Literature up to the beginning of the Second Classical Period (KLUGE); German essay on a literary subject.

6c. MIDDLE HIGH GERMAN.—This course is intended to give the Student a reading knowledge of Middle High German, and to point out the philological relations between Middle High German and the modern idiom. The philology of the language will be especially studied. The following texts will be studied as far as time allows: Das Nibelungenlied; Kudrun; HARTMANN, Der arme Heinrich; WOLFRAM, Parzival; WALTHER VON DER VOGELWEIDE, Gedichte.
Four hours a week.

Semitic Languages.

Professor:—D. Coussirat, B.A., B.D., D.D., Officier d'Académie.

The course comprises lectures on the above languages and their literature, their genius and peculiarities. Comparative philology, affinity of roots, etc., also receive due attention, while the portions selected for translation will be illustrated and explained by reference to Oriental manners, customs, history, etc.

Ordinary

1. Hebrew grammar and translation. English rendered into Hebrew. Masoretic notes explained. The Hebrew text compared with the Septuagint and Vulgate Versions. **Second Year.**
Four hours a week.

2. Hebrew Syntax. Translation of difficult passages of the Old Testament. Notes on the MASSORA and the TALMUD (Mishna and Gemara). **Third Year.**
Two hours a week.

3. Translation continued. Characteristics of the Semitic Languages, particularly of ARAMAIC, SYRIAC, SAMARITAN, RABBINIC, ARABIC, ASSYRIAN, SEMITIC INSCRIPTIONS. **Fourth Year.**
Two hours a week.

Honours

4a. HEBREW. Genesis. Isaiah, 40-66. Ecclesiastes. *Literature.*—F. LENORMANT, The beginnings of History. **Third Year.**

4*b*. ARAMAIC,—Daniel. Ezra. Selections from the Targums. *Literature.*—SAYCE, Lectures on the Origin and Growth of Religion. Two hours a week.

Fourth Year.

5*a*. HEBREW.—Malachi, Psalms, 1-72; Job, 26-42. *Literature.*—RENAN. A general History of the Semitic Languages.

5*b*. SYRIAC.—Selections from the Peshito, and from the CHRONICLES OF BAR HEBRÆUS. *Literature.*—W. WRIGHT, Comparative Grammar of the Semitic Languages.
Two hours a week.

4*b* and 5*b*. (*Literature excepted*) are the Additional Courses.

History.

Professor:—Charles W. Colby, M.A., Ph D.

Ordinary
First Year.

1. THE MAIN EPOCHS OF EUROPEAN HISTORY.
Twenty-five lectures will be given on the outlines of Classical, Mediaeval and Modern History, including colonial expansion since the 15th century. The design of this course is less to present a mass of facts than to illustrate the chief features of racial, political and social progress. At the Sessional Examination the results will be taken account of under the head of English. Short historical papers will be required at regular intervals from each student. (*Vide* English, I. p. 6·.)
One hour a week.

2. THE GERMAN INROADS AND THE MIDDLE AGES.
(Omitted in 1899-1900.)

Honours.
Third and Fourth Years.

3. STUDIES IN THE HISTORY OF DEMOCRATIC INSTITUTIONS DURING THE MIDDLE AGES.
(Omitted in 1899-1900.)

4. THE RENASCENCE AND THE REFORMATION.
Five hours a week.
The chronological limits of this course are 1350-1648. Beginning with Petrarch, the rise and character of Italian Humanism will be traced in some detail. Attention will then be chiefly fixed upon the countries of Northern Europe, although the part of Spain and Italy in the Counter Reformation will be discussed. The Lutheran schism will be regarded, not in isolation, but in the light of literary studies and 16th century politics. The spread of Protestant sects will be fol-

lowed out, and the culture of Northern Europe during the 15th century will receive separate notice. The rapid growth of diplomatic intercourse during the Thirty Years War and French advance towards the Rhine will be the concluding subjects.

Besides following the lectures, students are expected to read certain original texts and modern works. These will be indicated at the opening of the session.

5. The French Revolution, 1789-95.
(Omitted in 1899-1900.)

Summer Readings.

Students who are devoting special attention to the literary branches of the University course are advised to read, during the long vacation, either the first or the second set of the subjoined selections.

I. Herodotus, VI.-VIII., Macaulay's trans.; Thucydides, I., II., 1-65; VI., VII., Jowett's trans.; Plato, the Republic, Jowett's trans.; Plutarch, The Lives of Aristides, Themistocles, Pericles and Timoleon, Clough's trans.; Polybius, I., II., V., Shuckburgh's trans.; Livy, XXI.-XXII., Church & Brodribb's trans.; Tacitus, Annals II., Germania, Vita Agricolae, Church and Brodribb's trans.

II. Clarendon, History of the Rebellion, Book XI., Gibbon, Decline and Fall, Chaps. XLIV., L., LI., LXVI.; Burke, Reflections on the French Revolution; Hallam, Middle Ages, Chap. III.; Macaulay, History of England, Chap. III.; Bagehot, The English Constitution; Stubbs, Select Charters, Introduction; Bryce, The Holy Roman Empire, Chaps. I.-XV.; Lord Acton, German Schools of History, English Historical Review, Vol. I.; Matthew Arnold, Pagan and Mediaeval Religious Sentiment, in Essays in Criticism (First Series).

Mental and Moral Philosophy

Professor:—J. Clark Murray, LL.D.
Lecturer:—P. T. Lafleur, M.A.

Ordinary Second Year.

1. This course takes up in the first term the elements of **Psychology**, in the second the elements of **Logic**. Students are referred, among other works, to Murray, Handbook of Psychology, Book I., and to Jevons, Elementary Lessons on Logic.

Three hours a week.

Third Year.

2. In the first term the course takes up the Logic of Induction. Students are referred specially to MILL, System of Logic, Book III. Two hours a week.

In the second term the course takes up the most interesting problems in the Psychology of Cognition, tracing, as far as possible, the principal stages of the evolution of intelligence. The general problem, also, of the nature of knowledge is discussed, in view of the light which it throws on the ultimate nature of reality. Students are referred, among other works, to MURRAY, Handbook of Psychology, Book II., Part. I. Students are also required to write an essay on some philosophical subject.
Two hours a week.

Fourth Year.

3. This course is devoted entirely to Moral Philosophy, and follows, in its general outline, the subjects discussed in MURRAY'S Introduction to Ethics. Students are also required to write essays on ethical questions.
Three hours a week.

Honours

Third Year.

4. This course is devoted mainly to the history of Greek Philosophy. It begins with the colonial period, during which philosophical activity was most energetic among the colonies of the Greeks in Asia Minor and Italy. It then passes on to the Athenian period, beginning about the middle of the fifth century, B. C., when Philosophy found a home in the greatest centre of intellectual life in the ancient world. A third period is then described, during which Philosophy extends its culture over ancient life by the spread of the great schools, especially the Stoical and the Epicurean, which arose towards the end of the fourth century, B. C. Finally, some account is given of the movement, of which Alexandria was the centre, and by which Greek Philosophy was brought into contact with Oriental thought. The history is carried down to the closing of the Pagan Schools in Athens by the Emperor Justinian. Occasional lectures are also given on the other special studies of the Third Year Honour Course. Students are expected to make an independent study of the fragments of one of the early philosophers, and to write an essay embodying the results of their study.

The subjects of examination will be, in addition to the lectures, the following:—

Part I.—Schwegler's History of Philosophy, Chapters 1-21 inclusive; Mill's System of Logic, Books IV. and V.; James' Principles of Psychology. Chapters 10-16 inclusive; selected portions from Thomson's Outline of the Laws of Thought, from Jevons' Principles of Science, and from Venn's Empirical

Logic. Any two of these subjects, along with the Honour Lectures, may be taken as the Additional Course.

Part II.—Plato's Theatetus (by S. W. Dyde); Fraser's Selections from Berkeley.

Fourth Year.

5. The lectures of this Year form two courses. One is devoted to the earlier period of Modern Philosophy. After sketching the transition from Mediaeval to Modern thought, the course gives some account of the Empirical movement started in England by Bacon and Hobbes, and developed by Locke and his school. The Idealistic tendency of speculation during this period is sketched mainly in three movements:—that which began in England with the Cambridge Platonists, and culminated in Berkeley; the German movement originated by Leibnitz, and formulated by Wolf; the Cartesian movement which culminated in Spinoza. The course closes with a lengthy exposition of KANT'S three Critiques.

First term, two hours a week; second term, one hour a week.

6. The other course is on the History of English Philosophy from Hartley to Herbert Spencer. The lectures discuss the chief characteristics of English thought during the last one hundred and fifty years, more particularly as shewn in the works of English psychologists and political writers during that time. The writers to whom special attention is given are: in Psychology—PRIESTLEY, HARTLEY, ERASMUS DARWIN, the two MILLS, BAIN, and HERBERT SPENCER; in Political and Social Science—BURKE, PAINE, GODWIN. PALEY, BENTHAM, MALTHUS. References are also made to minor writers, whose work may be deemed to be of sufficient importance in the general movement and development of philosophy. No text-book is specially recommended; but the student is expected to read appointed selections from the writers under discussion, as well as to consult LESLIE STEPHEN'S History of English Thought in the Eighteenth Century, and a few chapters in LEWES' History of Philosophy. The principal points emphasized in the lectures are the empirical character of the English school in psychology and metaphysics, and the practical, utilitarian view of English political writers.

Second term; one hour a week.

Students are expected to write an essay exhibiting an independent study of one of the modern philosophers.

The subjects of examination, in addition to the lectures, will be

Part I.—Erdmann's History of Philosophy, Vol. II. (Engl. Transl.); James' Principles of Psychology, Vol. II.; Spencer's First Principles; Watson's Comte, Mill and Spencer, An Outline of Philosophy; Mill's System of Logic, Book VI. Any two

of these subjects along with the Honour Lectures may be taken as the Additional Course.

Part II.—Aristotle's Nicomachean Ethics; Zeller's Stoics, Epicureans and Sceptics; Spinoza's Ethics; Watson's Selections from Kant; Maine's Ancient Law.

Mathematical and Physical Sciences.

(Ordinary Courses.)

Professors :—A. Johnson, M.A., LL.D. (Mathematics and Astronomy).
" John Cox, M.A. (Physics).
" E. Rutherford, M.A. (Physics).
Lecturer.— Rev. H. M. Tory, M.A. (Mathematics)
Demonstrators in Physics:—F. H. Pitcher, B.A.Sc.; R. O. King, B.A.Sc.; R. K. McClung, B.A.; J. W. Fraser, B.Sc.

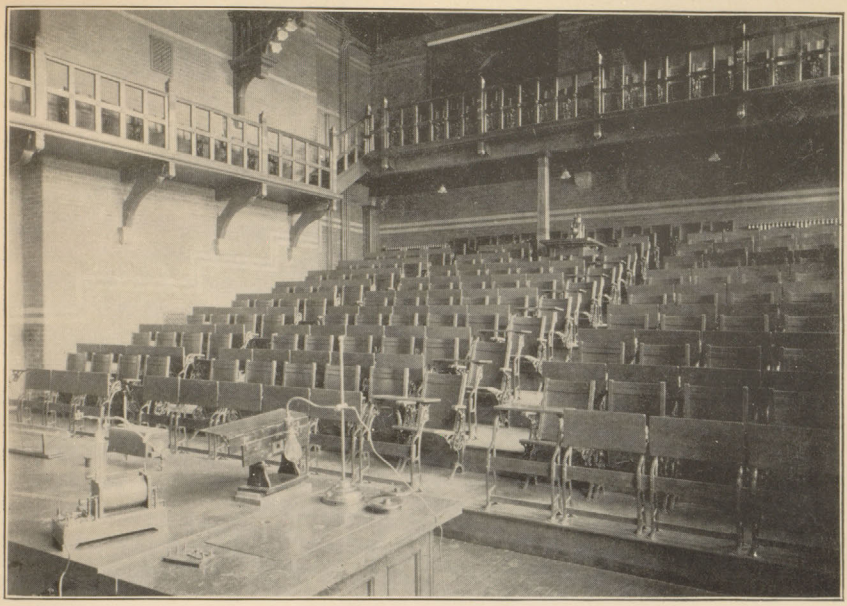
Ordinary First Year.

1. MATHEMATICS—Arithmetic.—Euclid, Books, 1, 2, 3, 4, 6 (omitting propositions 27, 28, 29), with definitions of Book 5, TODHUNTERS edition, or HALL and STEVENS ; the latter is recommended to students in advanced sections especially.—COLENSO'S Algebra (Part I.) to end of Quadratic Equations, or HALL AND KNIGHT'S Elementary Algebra.—GALBRAITH AND HAUGHTON, Plane Trigonometry. Nature and use of Logarithms.
Four hours a week.

Ordinary First Year

2. PHYSICS.—This course has two objects:—(1) to give the minimum acquaintance with Physical Science requisite for a liberal education to those whose studies will be mainly literary; (2) to be introductory to the courses in Chemistry and other branches of Natural Science, and to the more detailed courses in Physics in the Third and Fourth Years. Only the most important principles in each branch of the subject will be treated, as far as possible with reference to their historical development and mutual relations; and they will receive concrete illustration in the study of the principal instruments in daily use in the laboratory. Two illustrated lectures will be given per week. During the session each student will be required to attend in the laboratory eight times, and make measurements involving the use of the following instruments:—*Balance, Pendulum, Barometer, Thermometer, Sonometer, Spherical Mirror or Lens, Tangent Galvanometer, Wheatstone's Bridge.*

Outline of Syllabus. The scope and method of Science, Primary Phenomena ("States and Properties of Matter"), Motion, Velocity,



Macdonald Physics Building
A Lecture Theatre.



Macdonald Physics Building
An Elementary Electrical Laboratory.

Acceleration, Laws of Motion, Momentum, Energy, Work. The Parallelogram Law for Velocities and Forces, Equilibrium and the Simple Machines. Uniform circular motion, Vibration, the Pendulum. Fluid Pressure, the Barometer, Specific Gravity. Summary of *Mechanics*, indicating the principle of the Conservation of Energy. The missing Energy traced in (1) *Sound.* Nature of wave Motion. Intensity, Pitch and Quality of Musical notes, The stretched String and Organ Pipe. Resonance.

(2.) *Heat.* Temperature and the Thermometer. The Calorimeter, Fusion and Vaporisation. Laws of Boyle and Gay-Lussac. The Mechanical Equivalent. Application of Conduction, Convection and Radiation to common problems of Climate, Ventilation, etc.

(3). *Light.* Reflection, Refraction, the Spherical Mirror, Prism, Lens, Microscope, Telescope, Spectroscope, Polariscope. Principle of Interference and sketch of the Undulatory Theory.

(4). *Electricity and Magnetism.* The Electrophorus, the Modern Induction Machine, the Condenser. Coulomb's Law of Force. The idea of Potential. The Quadrant Electrometer. Atmospheric Electricity, Magnetic Pole, Moment, Field, and Law of Force. The Compass and Terrestrial Magnetism. Effects of Current. The Voltameter and Storage Cell. The Galvanometer. Heating Effects. Simple Batteries. Ohm's Law. Units and Measurement of Current, Resistance, Electromotive Force, Mutual Mechanical Effects of Conductors and Magnetic Fields. Principle of the Electric Motor. The Electro-magnet. Induction of Currents, and Principle of the Dynamo. Applications to Telegraph, Telephone, Lighting, and supply of Power

Conclusion.—Restatement of Principle of Conservation of Energy in complete form. Description of Energy.

Two hours a week.

Second Year.

3. MATHEMATICS.—Algebra.—The three Progressions: Ratio, Proportion, and Variation; Permutation and Combination; Scales of Notation; Logarithms; Interest and Annuities; Elements of Determinants; Geometrical Conic Sections—Solid Geometry (Euclid, Bk. XI. and first two props. of Bk. XII., or equivalent):—Spherical Trigonometry (Solution of Spherical Triangles with proofs of the necessary preliminary propositions and formulae).

Text books:—HALL AND KNIGHT'S Higher Algebra; WILSON'S Solid Geometry and Conic Sections.

DYNAMICS.—Projectiles; Impact; Simple Harmonic Motion; Simple and Compound Pendulum; Energy of Rotation.

Three hours a week.

Third Year. 4. MECHANICS AND HYDROSTATICS.—*Text-book*, LONEY, Mechanics and Hydrostatics for Beginners.
Two hours a week to January.

Third Year. 4. (*a*) OPTICS; *Text-book*, GALBRAITH and HAUGHTON.
Two hours a week from January to end of Session.

Third Year. 4. (*b*) (*Optional, but open to those only who have studied Mathematical Physics*). — ASTRONOMY — LOCKYER, Elementary Astronomy, (English Edition); first five chapters, viz.: The Stars and Nebulae; The Sun; The Solar System; Apparent movements; Time. Students are recommended to use with this an "Easy Guide to the Constellations," by GALL. This subject is taken with Optics.
Hours to be arranged.

Fourth Year. 5. ASTRONOMY.—(*Optional.*) GALBRAITH and HAUGHTON'S Astronomy or Brinkley by Stubbs and Brunnow.—The subject is taken with Optics as one course. The lectures will be given before Christmas.
First term; two hours a week.

Third Year. 6. EXPERIMENTAL PHYSICS.—(*First Course*).—LAWS OF ENERGY, SOUND, LIGHT AND HEAT. *Text-book*, GANOT or JONES,
Lectures fully illustrated.
Two hours a week.

Fourth Year. 7. EXPERIMENTAL PHYSICS.—(*Second Course.*)—ELECTRICITY AND MAGNETISM. *Text-book*, GANOT or S. P. THOMPSON.
Lectures fully illustrated.
Two hours a week.

LABORATORY COURSES.—In Experimental Physics, requiring three hours per week to be spent in practical measurements in the Macdonald Physical Laboratory, during the Third and Fourth Years, in conjunction with the Lecture courses 5 and 6.

Third Year. 8. (*a*) SOUND.—Velocity of Sound; Determination of rates of vibration of Tuning Forks; Resonance; Laws of vibration of strings.

(*b*) LIGHT.—Photometry; Laws of Reflection and Refraction; Indices of Refraction; Focal Lengths and Magnifying Powers of Mirrors, Lenses, Telescopes and Microscopes; the Sextant, Spectroscope, Spectrometer, Diffraction Grating, Optical Bench and Polariscopes.

(*c*) HEAT.—Construction and Calibration of Thermometers; Melting and Boiling Points; Air Thermometer; Expansion of solids, liquids and gases; Calorimetry.

9. MAGNETISM.—Measurements of Pole Strength and Moment of a Magnet; the Magnetic Field; Methods of Deflection and Oscillations; comparison of moments and determination of elements of Earth's magnetism. Frictional Electricity. Current Electricity.—Complete course of measurements of Current Strength, Resistance and Electromotive Force; Calibration of Galvanometers; the Electrometer; Comparison of Condensers; Electromagnetic Induction. Fourth Year.

Text-book.—GLAZEBROOK and SHAW, Practical Physics.

N.B.—For Advanced Courses intended for Electrical Engineering Students and Graduates pursuing the study of Physics, see Calendar, Faculty of Applied Science.

Mathematical and Physical Sciences.

Honour Courses and Advanced Sections.

Advanced* Sections

2. MATHEMATICS.—HALL and STEVENS, Euclid; CASEY, Sequel to Euclid; HALL and KNIGHT, Advanced Algebra; TODHUNTER or BURNSIDE and PANTON, Theory of Equations (selected course). Two or three hours each week. First Year.

6. MATHEMATICS.—LOCK, Higher Trigonometry, with MCCLELLAND and PRESTON, Spherical Trigonometry, Part I.; SALMON, Conic Sections, chapters 1, 2, 3, 5, 6, 7, and 10 to 13 inclusive; WILLIAMSON, Differential and Integral Calculus (selected course). Second Year.
Three hours a week.

Honour Courses.

7. MATHEMATICAL PHYSICS.—MINCHIN, Statics, Vol. I. (selected chapters); WILLIAMSON and TARLETON, Dynamics, Chaps. 1 to 8 inclusive; BESANT, Vol I., Hydro-Mechanics, Part I., chaps. 1, 2, 3, 7; PARKINSON, Optics. Third Year.
Two hours a week.

8. MATHEMATICS.—WILLIAMSON, Differential and Integral Calculus; and BOOLE or FORSYTH, Differential Equations, or SALMON, Geometry of Three Dimensions, (alternate years).
ASTRONOMY.—GODFRAY.
Two hours a week.
EXPERIMENTAL PHYSICS.—Courses 6 and 8.

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* *Honours may be awarded in the Advanced Sections* (*see p.* 14)

Honour Courses.

Fourth Year.

9. MATHEMATICS.—WILLIAMSON, Differential and Integral Calculus; SALMON, Conic Sections; SALMON, Geometry of Three Dimensions (course selected in text-book); BOOLE or FORSYTH, Differential Equations (selected course).

10. PHYSICAL ASTRONOMY.—GODFRAY, Lunar Theory; or CHEYNE, Planetary Theory; or the Theory of the Tides; NEWTON, Principia, Lib. I., secs. 9 and 11, with the necessary preliminary propositions.

11. MATHEMATICAL PHYSICS.—MINCHIN, Statics, Vol. II., selected chapters; WILLIAMSON and TARLETON, Dynamics; ROUTH, Dynamics of a Rigid Body (for reference); BESANT, Hydro-Mechanics; PRESTON, Theory of Light; CUMMING Theory of Electricity.

EXPERIMENTAL PHYSICS.—Courses 7 and 9.

Chemistry.

Professors:—B. J. Harrington, M.A., Ph.D., LL.D.
" J. Wallace Walker, M.A., Ph.D.
Lecturer: Nevil Norton Evans, M.A.Sc.
Demonstrator: Alexander Brodie, B.A.Sc.

Second Year.

1. GENERAL CHEMISTRY.—A Course of lectures on Elementary Chemical Theory, and on the principal elements and their compounds. The lectures are fully illustrated by means of experiments.

Text-book.—REMSEN'S Introduction to the Study of Chemistry.

Three hours a week.

1. ELEMENTARY PRACTICAL CHEMISTRY.—This course is compulsory for all undergraduates taking the above course of lectures. The work includes experiments illustrative of the Laws of Chemical Combination, the preparation of Pure Chemical Compounds, and elementary Qualitative Analysis.

Six hours a week.

Third Year.

2. INORGANIC CHEMISTRY.—The Chemistry of the Electro-positive Elements and their principal compounds.

Two hours a week during the first term.

3. ELEMENTARY ORGANIC CHEMISTRY.—An elementary course of lectures on Organic Chemistry for Biological Students and for students intending to take Organic Chemistry in the Fourth Year.

Two hours a week during the second term.

4. ADVANCED PRACTICAL CHEMISTRY.—Laboratory practice in methods of gravimetric, volumetric and electrolytic Quantitative Analysis.

NOTE.—The Organic Laboratory will be open during the Second Term for Biological Students who desire to obtain an elementary knowledge of the methods employed in preparing organic substances.

5. ORGANIC CHEMISTRY.—A systematic course of lectures on Organic Chemistry, including the Analysis of Organic Substances, Calculation of Formulae, Determination of Molecular Weights, Polymerism, Isomerism, etc, followed by a discussion of the more important derivatives of the Fatty and Aromatic Series of compounds. Students intending to enter the Medical Faculty would find this course of great advantage. **Fourth Year.**

Two hours a week.

6. PRACTICAL ORGANIC CHEMISTRY.—A complete course on the preparation and analysis of Organic Substances, with determinations of Molecular Weights, &c.

7. PHYSICAL CHEMISTRY.—The lectures on Physical Chemistry are divided into two parts. In the first term they include a study of such physical properties of gases, liquids and solids as are known to depend upon their chemical constitution, Thermo-Chemistry and the Law of Mass Action. The second term is devoted to Electro-chemistry. The lectures will be based upon the application of the gaseous laws to solutions.

8 PRACTICAL PHYSICAL CHEMISTRY.—Laboratory work will include the various methods of determining the Molecular Weights of gases and of substances in solution, accurate measurements of densities, refractive indices, surface tensions, and specific rotations; also examples of chemical statics and kinetics, and electro-chemical measurements.

9. MINERAL ANALYSIS.—A course of laboratory work comprising advanced quantitative analysis and investigation of the constitution of mineral species.

Mineralogy.

Professor:—B. J. Harrington, M.A., Ph.D.

1. MINERALOGY.—Lectures and illustrations demonstrated by models and specimens in the Peter Redpath Museum and the Macdonald Chemistry and Mining Building. Among the subjects discussed are: Crystallography; physical properties of minerals dependent upon light, electricity, state of aggregation, etc.; chemical composition, calculation of mineral formulae, quantivalent ratios, etc.; principles of classification, description of species. **Honours. Third Year**

First term, one hour a week; second term, two hours a week.

2. MINERALOGY (In continuation of No. 1.).—Description of species, particular attention being paid to those which are **Fourth Year**

important as rock constituents and to the economic minerals of Canada.

First term, two hours a week.

Third Year

3. DETERMINATIVE MINERALOGY.—Laboratory practice in blowpipe analysis and its application to the determination of mineral species. This work is carried on in the new laboratory provided for the purpose in the Chemistry and Mining Building.

Thursday, 2 to 5 p.m.

Elementary Biology

Second Year.

Profs. Penhallow and MacBride.

Elementary Biology.

The following course in Elementary Biology, while open to all Students in Arts, is designed to prepare for special study in Zoology Botany, and Medical Subjects, and especially to meet the requirements of those who may contemplate taking the Six Years' Course in Arts and Medicine. The Course, under the supervision of the professors of Botany and Zoology, will be given during the autumn term,—Zoology first eight weeks; Botany last four weeks.

NOTE.—The Faculty of Medicine strongly recommends all Students who are unable to take the Six Years' Course to devote at least one year of preliminary study to Biology, Physics and Chemistry before entering on their professional studies.

1a.—Animal Biology.

The Course in Animal Biology will discuss the fundamental properties of protoplasm; the principles of the formation of tissues; the formation of organs; an outline of vertebrate structure and function, as exemplified by the types Amoeba, Paramecium and Vorticella, Hydra, Lumbricus and the Dog-fish.

Two lectures and one laboratory period each week.

1b.—Plant Biology.

The Course in Plant Biology will deal chiefly with the general properties of cytoplasm; the structure and nature of the plant cell; movement; nutrition; respiration; fixation of carbon; division of labor and origin of organs; evolution of plant forms. These principles will be illustrated in their more simple forms by a Myxomycete, Pleurococcus, Spirogyra and Oedogonium, Fucus, Anthoceros and Pteris.

Two lectures and one demonstration each week.

Botany.

Professor :—D. P. Penhallow, B.Sc., M.A.Sc.
Lecturer :—C. M. Derick, M.A.

Ordinary Third Year

1. Histology.—This course, open only to students who have taken General Morphology for 1898-99, is designed to give an extended knowledge of vegetable anatomy and special morphology. It comprises:—

(*a*) Optics and construction of the microscope ; determination of amplifications; micrometry; drawings; section cutting; preparation of microscopic objects; micro-chemical reactions; study of cell contents and tissues; comparative studies of type forms of angiosperms and gymnosperms.

Botanical Microtechniqne (Zimmermann, trans. by Humphrey.)

Six hours a week.

Honours. Fourth Year.

(*b*) A course in Special Morphology, forming a part of the Honour Course in Biology, and open to students who have satisfactorily completed Botany 1 and *2a*, of which latter it is a continuation. It includes critical studies of the structure and development of the Thallophyta, Bryophyta and Pteridophyta, together with special readings on Biological problems. The following types will be studied:—A Myxomycete, Bacteria, Chroococcus, Nostoc, Rivularia, Spirogyra Pleurococcus, Oedogonium, Vaucheria, Fucus, Nemalion, Rhizopus, Penicillium, Puccinia, Agaricus, Pellia, Polytrichum, Pteris, Equisetum. Lycopodium, Selaginella. Comparisons with other forms in each group will also be made.

This course, when taken separately, ranks as an ordinary subject.

Six hours a week.

Zoology.

Professor :—Ernest William MacBride, M. A., B.Sc.
Demonstrator:—F. Slater Jackson.

Ordinary Third Year.

1. Elementary Zoology.—This course is designed to make the student thoroughly acquainted with the main types of structure met with in the animal kingdom, and with the principles on which the modern science of Zoology is founded. It com-

prises a study both theoretical and practical of the following types, viz.: Amoeba, Vorticella, Hydra, Craspedote Medusa, Alcyonium, Lumbricus, Nereis, Cambarus, Cyclops, Limulus, Periplaneta, Asterias, Echinus, Unio, Buccinum, Amphioxus, Mustelus, Rana and Lepus.

Six hours a week.

Honours. 2. ADVANCED ZOOLOGY.—This course, open only to students who have acquitted themselves creditably in the Third Year Examination in Zoology, forms part of the course for Honours in Biology. It comprises a study, theoretical and practical, of a number of additional types; a comparative study of the principal forms of development met with in the animal kingdom, and a special knowledge of vertebrate embryology. Attention will also be given to the general problems of philosophical zoology, especially such as are engaging the attention of zoologists at the present time.

This course, when taken separately, ranks as an ordinary subject.

Six hours a week.

N.B.—Both these courses include two formal lectures, and two periods of laboratory instruction in the week. Under no circumstances will a student be allowed to attend the lectures without taking practical work.

The fee for the Session in each of the above courses is $10.

NOTE.—The Zoological Laboratory will be very considerably extended, both as to accommodation and equipment, before the opening of the session of 1899-1900.

It is contemplated having a separate small laboratory, with microtomes, etc., for advanced work, and a large elementary laboratory capable of accommodating 80 students.

Geology and Palæontology.

Professor:—Frank D. Adams, M.A.Sc., Ph.D.
Demonstrator:—Osmond E. Leroy, B. A.

1. GENERAL GEOLOGY.—The lectures will embrace a general survey of the whole field of Geology, and will be introduced by a short course on Mineralogy. Especial attention will be devoted to Dynamical Geology and to Historical Geology, includ-

ing a description of the fauna and flora of the earth during the successive periods of its past history.

The lectures will be illustrated by the extensive collections in the Peter Redpath Museum, as well as by models, maps, sections and lantern views. There will be an excursion every Saturday until the snow falls, after which the excursion will be replaced by a demonstration in the Museum.

Text-book.—DAWSON, Hand-book of Geology. *Books of Reference.*—DANA, Manual of Geology; SCOTT, An Introduction to Geology.

Three hours a week throughout the year, with additional excursions and demonstrations as above stated.

Honours.

2. PETROGRAPHY.—The modern methods of study employed in Petrography are first described, and the classification and description of rocks is then taken up. **Fourth Year.**

One lecture a week during the first term. One afternoon a week throughout the year will be devoted to special microscopical work in the Petrographical Laboratory.

Text Book.—Harker, Petrology for Students.

Books of Reference.—ROSENBUSCH, Mikroskopische Physiographie, and RUTLEY, Rock-forming Minerals.

3. PALÆONTOLOGY.—An extension of the Palaeontology of Course I, with special studies of some of the more important groups of fossils. **Fourth Year.**

One lecture a week during the second term and one demonstation a week, with special studies in the Peter Redpath Museum.

Books of Reference.—NICHOLSON and LYDEKKER, Manual of Palaeontology; ZITTEL, Text-Book of Palaeontology.

4 PRACTICAL AND APPLIED GEOLOGY.—A description of the methods employed in observing and recording geological facts, concluding with a general treatment of the nature and mode of occurrence of Ore Deposits. **Fourth Year.**

One lecture or demonstration a week throughout the year.

Text-books.—GEIKIE, Outlines of Field Geology; KEMP, Ore Deposits of the United States. PHILLIPS and LOUIS, A Treatise on Ore Deposits.

5 CANADIAN GEOLOGY.—A general description of the Geology and Mineral Resources of the Dominion. **Fourth Year.**

One lecture a week during the second term.

Text-book.—DAWSON, Hank-book of Geology.
Books of Reference.—The Reports of the Geological Survey of Canada.

6. GEOLOGICAL COLLOQUIUM.—A discussion each week of some Geological topic, references to the literature of which have been given by the Professor in the week preceding. The course is intended to give students some acquaintance with Geological literature, as well as a wider knowledge of the great principles which underlie the Science.
One hour a week in second term.

A large amount of additional private reading will also be required of Candidates for Honours.

Students taking any of these courses are entitled to tickets of admission to the Museum of the Natural History Society of Montreal.

Meteorology.

Superintendent of Observatory :—C. H. McLeod, Ma.E.

Instruction in Meteorological Observations will be given in the Observatory at hours to suit the convenience of the senior students.
Certificates will be granted to those students who pass a satisfactory examination on the construction and use of meteorological instruments and on the general facts of Meteorology.

Pedagogy.

Principal of the Normal School:—S. P. Robins, M.A., LL.D.

Lectures on this subject will be given in the Normal School to undergraduates of the Third and Fourth Years who wish to obtain the Provincial Academy Diploma.
Lecture hours to be arranged.

Elocution.

Instructor:—J. P. Stephen.

Instruction is given in this subject at such hours as may be arranged at the beginning of the session.

Physical Culture.

Medical Examiner and Instructor:—R. Tait McKenzie, B.A., M.D.

The classes will meet at the University Gymnasium, at hours to be announced at the commencement of the Session. The Wicksteed Silver and Bronze Medals (the gift of Dr. R. J. Wicksteed) are offered for competition to students of the Graduating Class and to students who have had instruction in the Gymnasium for two sessions,—the silver medal to the former, the bronze medal to the latter. (See Regulations appended.)

LECTURES IN THE UNDERGRADUATE COURSE IN THE FACULTY OF ARTS.

SESSION 1899-1900.

	HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
	9	Mathematics.	Mathematics.	Mathematics.	Greek.	Mathematics.	
	10	Latin.	Greek.	Latin.	French.	Greek.	
	11	French.	German.	German.	German.	English.	
	12	Physics.	French.	English.	Latin.	Physics.	
	2	Greek.	English.	French.		Latin.	
	3					German.	
SECOND YEAR.	9	French.	Logic.	English.	German. Hebrew.	German. Hebrew.	SATURDAY.
	10	Greek.	German. Hebrew.	French.	Logic.	Mathematics	Elem. Biology. Zoology. (*b*) Botany. Lab (*c*)
	11	Mathematics.	Chemistry.	Latin.	Latin.	Greek.	
	12	English.	Greek.	Chemistry.	English.	Chemistry.	
	2	Latin.	French.	Logic.	Greek.	Latin.	
	3	German. Hebrew.	Elem ntary. Biology (Lab.)	Dynamics. Elem. Biology. Zool.(*b*), Bot. (*c*)	French.	Elem. Biology. Zool. Lab. (*b*)	
	4	Elem. Biol. Botany.(*c*)					

TIME TABLE.—*Continued.*

YEAR.	HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
THIRD YEAR.	9	English.	Greek Phys. Hebrew			German.	
	10	Chaldee.	French.	Math. Physics. Chaldee.	French. Chemistry.	Rhetoric.	
	11	Metaphysics.	Zoology.	Metaphysics.	Zoology.	Math. Physics	
	12	Latin.	Exp. Physics.	Greek.	Exp. Physics. Hebrew.	Latin.	
	2	Pract. Chem.	Botany.	Pract. Chem. Pract. Zool.		Botany.	
	3		German.	Pract. Zool.			
	4						
FOURTH YEAR.	9	Exp. Physics.	Astronomy (*a*)	Geology. Syriac.	Exp. Physics.	Latin. German.	SATURDAY.
	10	Geology. Syriac.	French. Latin.	Latin.	English Lit.	Geology.	
	11	Greek.	Moral Phil.	Greek.	Moral Phil.	French.	
	12	Moral Phil.	Organic Chem	Miner. Demons.	Hebrew. Astronomy (*a*).		
	2	Pract. Chem. Zoology.	Botany.	Pract. Chem. Zoology.	Pract. Chem.	Botany.	
	3		German.				
	4						

Advanced Sections will be formed in all subjects in the first two years, so far as practicable and in these Honours may be awarded. In Greek, Latin, English and Mathematics there are Advanced Sections in the First and Second Years, 2 hours a week.

(*a*) During First Term, (*b*) during First 8 weeks, (*c*) during last four weeks of First Term.

Honour Courses (Third and Fourth Years) will be given in the following subjects, the precise hours for which will be arranged to suit the convenience of the classes :—

CLASSICS : Third and Fourth Years, 6 hours a week.

ENGLISH : Third Year, 6 hours a week ; Fourth Year, 6 hours a week.

FRENCH : Third Year, 4 hours a week ; Fourth Year, 4 hours a week.

GERMAN : Third Year and Fourth Year, 4 hours a week.

SEMITIC LANGUAGES : Third Year, 2 hours a week ; Fourth Year, 2 hours a week.

HISTORY : Third and Fourth Years, 5 hours a week.

MENTAL AND MORAL PHILOSOPHY : Third Year, 2 hours a week ; Fourth Year, 2 hours a week.

MATHEMATICS, MATHEMATICAL PHYSICS AND ASTRONOMY : Third Year, 4 hours a week ; Fourth Year, 4 hours a week.

GEOLOGY AND MINERALOGY : Third Year, 4 hours a week (First Term); 5 hours a week (Second Term); Fourth Year, 7 hours a week.

BIOLOGY : 4 hours a week and 4 periods of Practical Work.

The CHEMICAL LABORATORIES are open every day (except Saturday) from 9 a.m. to 5 p.m. The Lectures on Chemistry and Laboratory classes are all open to Arts Students.

PRACTICAL PHYSICS : Third Year, Monday, 10 a.m. to 1 p.m., or Friday, 2.30 p.m. to 5.30 p.m. ; Fourth Year, Wednesday, 2.30 p.m. to 5.30 p.m.

The BOTANICAL LABORATORIES are open daily from 9 a.m. to 5 p.m.

GEOLOGY : Demonstrations and Excursions on Saturday. The Petrographical Laboratory is open every day throughout the Second Term.

THE ZOOLOGICAL LABORATORY is open daily from 9 a.m. to 1 p.m. and from 2 p.m. to 5 p.m. Practical Work under the supervision of the Professor and Demonstrator, Wednesday, 2 to 4 p.m., and Saturday, 9 to 12 a.m. The time for Practical Work in the Fourth Year will be arranged.

N B.—*The hours in this table are subject to alteration during the Session.*



Royal Victoria College.

Royal Victoria College.

This College will be opened in September. It has been built, endowed, and equipped by the Right Honourable The Lord Strathcona and Mount Royal, G.C.M.G., Chancellor of the University, and is intended to take up and continue, under greatly improved conditions, the work done for so many years in the Special Course for Women in the Faculty of Arts ("Donalda" endowment).

The aim of the College, which is now a constituent part of McGill University, has been defined as "the higher education of women; and mainly to qualify women to take degrees in Arts (including Pure Science) and to provide them with instruction in those branches of a liberal education necessary thereto, and in such other subjects as the Board of Governors may from time to time determine."

The classes for women will continue to be wholly separate from those for men, except classes for Candidates for Honours (including some of the optional courses and certain courses in the Third and Fourth Years). While the conditions of the new curriculum in the Faculty of Arts permit to women, as also to men, a considerable latitude in the choice of subjects, the examinations for women students are identical with those for men, in all studies common to the two sexes. Women have the same privileges as men with regard to Classing, Honours, Prizes, and Medals.

Regulations for Examinations, Attendance, Conduct, etc., are the same as for men. Undergraduate-Students of the Royal Victoria College wear the academic dress; others do not.

The Jane Redpath Exhibition is open for competition, at the beginning of the First or Second year, to both men and women; value, about $90 yearly.

For September, 1899, there are (besides other Exhibitions open to the First Year only, both men and women) Two "Donalda" Exhibi-

tions open to women only; value $100 and $120 yearly. For subjects, see pp. 9-11.

Reference is made to the Announcement of the Faculty of Arts for regulations as to Matriculation, Course of study for the Degree of B.A., or B.Sc., Honours Courses, etc. The fee for tuition in the Royal Victoria College is the same as that at McGill, viz., Sixty dollars (see pp. 34-36). Students who desire to reside in College will pay an inclusive fee (Board, Residence, Tuition), the amount of which will vary according to the accommodation selected; for further information apply to the Secretary, McGill College.

ROYAL VICTORIA COLLEGE.

TIME TABLE, SESSION 1899-1900.

YEARS	HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
FIRST YEAR.	9	Greek.	Physics.	French.	Greek.	Greek.	
	10	English.	English.	Greek.		Mathematics.	
	11	German.	Mathematics.	Latin.	English.	French.	
	12	Latin.	Latin.	Mathematics.	German.	Latin.	
	2	Mathematics.	French.	German.	French.	German.	
	3				Physics.		
SECOND YEAR.	9	Latin.	Greek.	French.	Latin.	English.	Elem. Zool. Bot. Lab. (*c*)
	10	German.	Chemistry.	Math.	English.	Latin.	Elem. Biol. Zool. (*b*)
	11	English.	French.	Greek.	Mathematics.	German.	
	12	Logic.	Logic.	Latin.	German.	French.	
	2	French.	Dynamics. Elem. Biol.	Chem.	Logic.	Chem.	
	3	Greek.	Elem. Biol. Zool. Lab. (*b*)	German.	Greek.	Elem. Biol. Zool. Lab. (*b*)	
	4			Elem. Biol. Botany (*c*)	Elem. Biol. Bot. Lab. (*c*)		
	5	Elem. Biol. Botany (*c*)					

TIME TABLE—*Continued.*

EARS	HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
THIRD YEAR.	9	Latin.	German.	German. Greek.			
	10		Exp. Physics.		Greek. Exp. Physics.	French.	
	11	French.	Rhetoric.		Math. Phys.	Latin.	
	12	English.	Zoology.		Zoology.	Math. Phys.	
	2		Botany.	Pract. Zool.		Botany.	
	3	Metaphysics.		Metaphysics. Pract. Zool.			
	4	German.					
FOURTH YEAR.	9	Astronomy (*a*)	German.	German.	Moral Phil.	Geology.	
	10	French.	Exp. Physics. Greek.	Geology.	Exp. Physics.	French.	
	11		Latin.	English Lit.	Math. Phys.	Latin. Astronomy(*a*)	
	12	Geology.	Moral Phil.	Mineralogy (*a*) Moral Phil.	Greek.	Math. Phys.	
	2	Zoology.	Botany.		Zoology.	Botany.	
	3						
	4				German.		

Advanced Sections will be formed in all subjects in the first two years so far as practicable and in these Honours may be awarded. In Greek, Latin, English and Mathematics there are Advanced Sections in the First and Second Years, 2 hours a week.

(*a*) During First Term, (*b*) during First 8 weeks, (*c*) during last 4 weeks of First Term.

Honour Courses (Third and Fourth Years) will be given in the following subjects, the precise hours for which will be arranged to suit the convenience of the classes.

CLASSICS: Third and Fourth Years, 6 hours a week.

ENGLISH: Third Year, 6 hours a week; Fourth Year, 6 hours a week.

FRENCH: Third Year, 4 hours a week; Fourth Year, 4 hours a week.

GERMAN: Third Year and Fourth Year, 4 hours a week.

HISTORY: Third and Fourth Years, 5 hours a week.

MENTAL AND MORAL PHILOSOPHY: Third Year, 2 hours a week; Fourth Year, 2 hours a week.

MATHEMATICS, MATHEMATICAL PHYSICS AND ASTRONOMY: Third Year, 4 hours a week; Fourth Year, 4 hours a week.

GEOLOGY AND MINERALOGY: Third Year, 4 hours a week (First Term); 5 hours a week; (Second Term); Fourth Year, 7 hours a week.

BIOLOGY: 4 hours a week and 4 periods of Practical Work.

THE CHEMICAL LABORATORIES are open every day (except Saturday) from 9 a.m. to 5 p.m.

PRACTICAL PHYSICS: Third Year, Monday, 10 a.m. to 1 p.m., or Friday, 2.30 p.m. to 5.30 p.m.; Fourth Year, Wednesday, 2.30 p.m. to 5.30 p.m.

THE BOTANICAL LABORATORIES are open daily from 9 a.m. to 5 p.m.

GEOLOGY: Demonstrations and Excursions on Saturday. The Petrographical Laboratory is open every day throughout the Second Term.

THE ZOOLOGICAL LABORATORY is open daily from 9 a.m. to 1 p.m. and from 2 p.m. to 5 p.m. Practical Work under the supervision of the Professor and Demonstrator, Wednesday, 2 p.m. to 4 p.m., and Saturday, 9 to 12 a.m. The time for Practical Work in the Fourth Year will be arranged.

N.B.—*The hours in this table are subject to alteration during the Session.*

FACULTY OF APPLIED SCIENCE.

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FACULTY OF APPLIED SCIENCE.

DATES OF EXAMINATIONS AND COMMENCEMENT OF LECTURES.

The matriculation examinations will be held as follows :—

Latin, Thursday, September 14th, 9 a.m.

Mathematics, Friday, September 15th, 9 a.m.

English, Monday, September 18th, 9 a.m.

French, Tuesday, September 19th, 9 a.m.

German, Tuesday, September 19th, 2 p.m.

Greek, Thursday, September 21st, 9 a.m.

The supplemental examinations in Surveying will be held on Thursday, August 31st.

The supplemental examinations in Electrical, Mechanical and Practical Chemistry subjects of the Second and Third Years, will be held on Thursday, September 14th, and following days.

The supplemental examinations in all other subjects will be held on October 7th and following days.

The examination in English Literature (Vacation Work, see p. 141) and the Exhibition examinations will be held on Saturday, October 7th, and following days.

Field Work in Surveying will commence on Friday, September 1st.

Lectures in the First Year will commence on Wednesday, September 20th.

Lectures in the Second, Third and Fourth Year, Electrical, Mechanical and Practical Chemistry Courses will commence on Wednesday, September 20th.

Lectures in the Second, Third and Fourth Year, Architectural, Civil and Mining Courses will commence on Monday, October 2nd.

Faculty of Applied Science.

WILLIAM PETERSON, M.A., LL.D., Principal.
HENRY T. BOVEY, M.A., D.C.L., LL.D., M. Inst. C.E., F.R.S.C., Dean of the Faculty.

PROFESSORS.

B. J. HARRINGTON, M.A., Ph.D., F.R.S.C., Greenshields Professor of Chemistry and Mineralogy.
HENRY T. BOVEY, M.A., D.C.L., Scott Professor of Civil Engineering and Applied Mechanics.
C. H. MCLEOD, Ma.E., F.R.S.C., M.Can.Soc.C.E., Professor of Surveying and Geodesy, Lecturer in Descriptive Geometry, and Superintendent of the Observatory.
G. H. CHANDLER, M.A., Professor of Applied Mathematics.
JOHN COX, M.A., Macdonald Professor of Physics.
S. HENBEST CAPPER, M.A., A.R.I.B.A., R.C.A., Macdonald Professor of Architecture.
J. B. PORTER, E.M., Ph.D., M.Can.Soc.C.E., Macdonald Professor of Mining and Metallurgy.
J. W. WALKER, M.A., Ph.D., Macdonald Professor of Chemistry.
E. RUTHERFORD, B.Sc., M.A., Macdonald Professor of Physics.
R. B. OWENS, E.E., Macdonald Professor of Electrical Engineering.
FRANK D. ADAMS, M.A.Sc., Ph.D., F.G.S., Logan Professor of Geology.
R. J. DURLEY, B.Sc., Ma.E., A.M.Inst.C.E., Workman Professor of Mechanical Engineering.



Macdonald Engineering Building.

HENRY F. ARMSTRONG, Assistant Professor of Descriptive Geometry and Freehand Drawing.
E. G. COKER, B.A., B.Sc., A.M.Inst.C.E., Assistant Professor of Civil Engineering.
NEVIL NORTON EVANS, M.A.Sc., Lecturer in Chemistry.
J. G. G. KERRY, Ma.E., Asso.M.Can.Soc.C.E., Lecturer in Surveying and Descriptive Geometry.
L. HERDT, Ma.E., E.E., Lecturer in Electrical Engineering.
JOHN W. BELL, M.Sc., Lecturer in Metallurgy.
H. M. JAQUAYS, M.A., M.Sc., Lecturer in Mechanical Engineering.

DEMONSTRATORS.

F. H. PITCHER, M.A.Sc., in Physics.
ALEXANDER BRODIE, M.A.Sc., in Practical Chemistry.
ROBERT O. KING, B.A.Sc., in Physics.
N. M. YUILE, B.Sc., in Mining.
S. F. KIRKPATRICK, B.Sc., Dawson Fellow in Metallurgy.
J. W. FRASER, B.Sc., in Physics.
R. M. MCCLUNG, B.A., in Physics.
....., in Mechanical Engineering.

With the foregoing are associated the following PROFESSORS of the Faculty of Arts:—
CHARLES E. MOYSE, B.A., Molson Professor of English Language and Literature.
D. P. PENHALLOW, B.Sc., M.A.Sc., F.R.S.C., Professor of Botany.
E. W. MACBRIDE, M.A., B.Sc., Professor of Zoology.

ASSISTANT PROFESSORS AND LECTURERS.

R. S. LEA, Ma.E., Asso.M.Can.Soc.C.E., Assistant Professor of Civil Engineering, and Lecturer in Mathematics.

FACULTY OF APPLIED SCIENCE.

§ I. GENERAL STATEMENT.

The Instruction in this Faculty is designed to afford a complete preliminary training, of a practical as well as theoretical nature, to Students who desire to pursue the profession of Architecture, or who are preparing to enter any of the various branches of the professions of Engineering and Surveying, or are destined to be engaged in Assaying, Practical Chemistry, and the higher forms of Manufacturing Art.

The Degrees conferred by the University upon such undergraduates of the Faculty as shall fulfill the conditions and pass the Examinations hereinafter stated will be, in the first instance, "Bachelor of Science" (B.Sc.), mention being made in the Diploma of the particular Department of study pursued; and, subsequently, the degrees of "Master of Science" (M.Sc.), and "Doctor of Science" (D.Sc.) (§ IV.)

§ II. SUBJECTS OF INSTRUCTION.

The tables on the following pages shew the subjects of instruction and the hours per week devoted to each subject in the several Courses, viz:—

I.—Architecture.
II.—Civil Engineering and Surveying.
III.—Electrical Engineering.
IV.—Mechanical Engineering.
V.—Mining Engineering and Metallurgy.
VI.—Practical Chemistry.

	SUBJECTS.		I	II	III	IV	V	VI
FIRST YEAR.	Descriptive Geometry	§ XIII., 4	3	3	3	3	3	3
	" "	" 7	—	—	—	—	—	—
	English	" 14	2	2	2	2	2	2
	Freehand Drawing	" 5	3	3	3	3	3	3
	Geometrical Drawing	" 4	2 (a)	2 (a)	2 (a)	2 (a)	2 (a)	2 (a)
	Lettering	" 5	3	3	3	3	3	3
	Mathematics	" 13	10	10	10	10	10	10
	Physics	" 12	2	2	2	2	2	2
	Projections	" 4	3	3	3	3	3	3
	Mathematical Laboratory	§ XIV., 7	3 (a)	3 (a)	3 (a)	3 (a)	3 (a)	3 (a)
	Physical Laboratory	" 16	3	3	3	3	3	3
	Shopwork	§ XVI.	7	7	7	7	7	7
SECOND YEAR.	Architecture, Theory of	§ XIII., 1	1	—	—	—	—	—
	Architectural History	" 1	2	—	—	—	—	—
	Building Construction	" 2	1	1	—	—	—	—
	Chemistry	" 8	3	3	3	3	3	5
	Descriptive Geometry	" 4	3	3	3	3	3	—
	Drawing and Design		10	—	—	—	—	—
	Freehand Drawing	" 5	4	—	—	—	—	—
	Kinematics of Machinery	" 7	—	—	—	—	—	—
	Mapping		—	—	3	3	—	—
	Mathematics	" 13	6	6	—	—	3	—
	Mechanism	" 7	—	1	6	6	6	6
	Physics	" 12	2	2	—	—	1	—
	Surveying	" 3	—	3	2	2	2	2
	Chemical Laboratory	§ XIV., 4	3	3	—	—	3	—
	Physical Laboratory	" 16	3	3	3	3	3	10
	Shopwork	§ XVI.	—	3(a)6(b)	3	3	3	3
					6	6	4	—
THIRD YEAR.	Architecture	§ XIII., 1	2	—	—	—	—	—
	Art History	" 1	1	—	—	—	—	—
	Chemistry	" 9	—	—	—	—	1	4
	D. C. Dynamo, Machinery, etc.	" 6	—	—	2	—	—	—
	Decoration, Ornament, etc.	" 1	—	—	—	—	—	—
	Descriptive Geometry	" 4	3 (a)	4	—	—	—	—
	Designing or Drawing	"	12	—	6(a) 3(b)	—	—	—
	Determinative Mineralogy	" 11	—	—	—	—	—	—
	Dynamics of Machinery	" 7	—	—	2	2	3	3
	Freehand Drawing	" 5	6	—	—	—	—	—
	Geology	" 11	—	3	—	—	3	3
	Graphical Statics	" 2	2(a) 3(b)	2(a) 3(b)	2 (a)	2 (a)	2 (a)	—
	Hygiene	" 1	1 (b)	—	—	—	—	—
	Machine Design	" 7	—	—	2	2	2	—
	" (Exercises)	"	—	—	—	1	—	—
	Mapping	" 3	3	6	—	—	3	—
	Mathematics	" 13	3 (Opt.)	3	3	3	—	—
	Mechanical Drawing	" 7	—	3 (Opt.)	3	6	3	—
	Metallurgy	" 8	—	—	—	1	1	—
	Mineralogy	" 11	—	—	—	—	2	2
	Ore Dressing	" 8	—	—	—	—	1	1
	Modelling	" 1	3 (b)	—	—	—	—	—
	Municipal Engineering	" 2	1	1	—	—	1	—
	Museum Work in Geology	" 11	—	1	—	—	—	—
	Physics	" 12	2(a) 1(b)	2(a) 1(b)	2(a) 1(b)	2(a) 1(b)	2(a) 1(b)	—
	Specifications	"	1	—	—	—	—	—
	Surveying	" 3	3	2	—	—	2	—
	Theory of Structures	" 2	3	3	3	3	3	—
	Thermodynamics	" 10	—	1	1	1	1	—
	Chemical Laboratory	§ XIV. 4	—	—	—	—	6	9
	Electrical Engineering Lab.	" 6	—	—	6	—	—	—
	Mining Laboratory	" 13	—	—	—	—	3 (a)	—
	Physical Laboratory	" 16	3 (a)	3 (a)	6	3 (a)	3 (a)	3 (a)
	Testing Laboratory	" 17	3 (b)	3 (b)	3 (b)	3 (b)	3 (b)	—
	Thermodynamic Laboratory	" 19	—	2 (b)	3 (b)	3 (b)	2 (b)	—
	Shopwork	§ XVI.	—	—	4½	6	—	—

(a) First Term. (b) Second Term.

FOURTH YEAR.

SUBJECTS.			I	II	III	IV	V	VI
A. C. Machinery	§ XIII.	6	—	—	3	—	—	—
Architecture	"	1	1	—	—	—	—	—
Art History	"	1	1	—	—	—	—	—
Chemistry	"	9	—	—	—	—	—	6
Chemistry (Electro, Metallurgical or Mineral)	"	9	—	—	2(b) opt.	—	1(b)Opt.	—
Designing	"	18	9	3	6	6(a),3(b)	—	
Dynamics of Machinery	"	7	—	—	2	2	—	—
" " Exercises	"		—	—	—	3	—	—
Electrodynamics	"	6	—	—	—	—	—	—
Electric Lighting	"	6	—	—	3 (a)	—	—	—
Electrical Railways	"	6	—	—	3 (b)	—	—	—
" Measurements	"	6	—	—	1	—	—	—
Freehand Drawing	"	5	6	—	—	—	—	—
Geodesy	"	3	—	2	—	—	—	—
Geology	"	11	3 (a)	—	—	—	2	—
Hygiene	"	1	1 (b)	—	—	—	—	—
Hydraulics	"	2	—	2	2	2	2(a), 2(b) Opt.	—
Machine Design	"	7	—	—	1 (a)	1	—	—
Machinery	"	7	—	1	1	1	1	—
Metallurgy	"	8	—	—	—	1	3	—
Mineralogy	"	11	—	—	—	—	—	—
Mining	"	8	—	—	—	—	2	—
Modelling	"	1	3 (b)	—	—	—	—	—
Municipal Engineering	"	2	1	—	—	—	—	—
Palaeontology	"	11	—	—	—	—	1(b)Opt. 1 (a)	—
Petrography	"	11	—	—	—	—	2	—
Railroad Engineering	"	2	—	2	—	—	—	—
Specifications	"		1	—	—	—	—	—
Theory of Structures	"	2	—	4	—	—	—	—
Thermodynamics	"	10	—	—	2 (a)	2	—	—
Transmission and Distribution of Power	"	1	—	1	1	1	1	—
Assay Laboratory	§ XIV.	13	—	—	—	—	6 (b)	—
Chemical Laboratory	"	4	—	—	—	—	8½ (a), 3 (b)	29
Electrical Engineering Lab.	"	6	—	—	9	—	—	—
Electro-Chemical Laboratory	"	4	—	—	3(b)Opt.	—	Opt.	—
Geodetic Laboratory	"	11	—	3	—	—	—	—
Hydraulic Laboratory	"	12	—	3 (b)	3 (b)	3 (b)	3(b),3(b) Opt.	—
Mechanical Engineering Lab.	"	8	—	—	—	7	—	—
Metallurgical Laboratory	"	13	—	—	—	4 (a)	4½	—
Mining Laboratory	"	13	—	—	—	—	6	—
Museum Work	"		—	—	—	—	1 (b)	—
Petrographical Laboratory	"	15	—	—	—	—	3 (b)	—
Physical Laboratory	"	16	—	—	6	—	—	—
Testing Laboratory	"	17	—	6	—	3 (b)	—	—
Thermodynamic Laboratory	"	19	—	—	—	7	—	—
Shopwork	§ XVI.		—	—	4	4	—	—

(a) First Term. (b) Second Term.

§ III. MATRICULATION AND ADMISSION.

All Students are recommended to take one or two years of the Arts Course. They are then, if otherwise qualified, admitted into the Faculty of Applied Science without examination. (See § IV. iv.)

Students and Graduates in Arts will be admitted to such standing in the Faculty of Applied Science as their previous studies will warrant, but are recommended to take the drawing and shopwork during their Arts Course.

Candidates who produce certificates of having already completed a portion of a course in some recognized School of Applied Science may be admitted to an equivalent standing.

Students may be allowed to take one or more courses of instruction, as Partial Students, upon showing, by examination or otherwise, that they are qualified to do so.

Candidates for examination must present themselves on the first day of examination, and all Students, excepting those engaged in surveying field work, must attend punctually at 9 a.m. on Wednesday, September 20th, when the lectures will begin.

Examinations for entrance will be held in 1899 (1) on June 12th, and following days, in McGill College and at local centres, and (2) on Thursday, September 14, and following days, in McGill College only.

Any Head Master or other person desiring a local examination in June must, before May 10th, submit the name of some suitable person, preferably a University graduate, who is willing to act as Deputy Examiner, *i.e.*, receive the questions, hold the examinations, and forward the answers to Montreal. Further particulars relating to this examination will be given on application to the Secretary of the University.

SUBJECTS OF EXAMINATION.

(*a*) Mathematics.
(*b*) English, including History.
(*c*) French *or* German *or* Greek *or* Latin.
In 1901 and subsequently,
(*d*) *One* of the following:—(1) Another Language, (2) Botany; (3) Chemistry, (4) Physics, (5) Physiography.

Mathematics.—*Arithmetic.*—All the ordinary rules, including square root and a knowledge of the Metric System. *Algebra.*—Elementary rules, Involution, Evolution, Fractions, Indices, Surds, Simple and Quadratic equations of one or more unknown quantities. *Geometry.*—Euclid, Bks. I., II., III., IV. and VI., with definitions of Bk V., and easy deductions. An equivalent amount of geometry from any standard text-book will be accepted. *Trigonomery.*—As in Hamblin Smith, pp. 1-100, omitting Ch. XI.

N.B.—In 1900 and subsequently the following additional Algebra will be required:—The three Progressions: Ratio, Proportion and Variation ; Permutations and Combinations ; Binomial Theorem; Scales of Notation; Logarithms; Interest and Annuities.

English—Writing from Dictation. *Grammar.*—A paper on English Grammar, including Analysis. The candidate will be expected to show a good knowledge of Accidence, as treated in any grammar prepared for the higher forms of schools. A similar statement applies to grammatical Analysis. Candidates are required to state the clause to which any subordinate sentence belongs, and to arrange and define the various parts of all sentences set. (Failure in Analysis and Parsing will cause the rejection of the paper.) West's Elements of English Grammar is recommended as a text-book, and attention is particularly directed to pages 197-216. *English History.*—The candidates will be required to give the chief details of leading events. While any text-book written for the upper forms of schools may be used in preparation for the examination, Gardiner's Outline of English History (Longmans) is recommended. *Composition.*—The candidates will write a short essay on a subject given at the time of the examination. *Literature.*—SCOTT'S Lady of the Lake, ed. Stuart (Macmillan) and SHAKSPERE'S Richard II., ed. Deighton (Macmillan), *or* WORDSWORTH (Arnold's Selections as specified in Junior Matriculation English [1899] of the University of Toronto.)

French.—Grammar, including syntax, as in Bertenshaw (Longmans), or equivalent text book. Easy translation from French into English and from English into French ; Dictation or similar exercise. Special credit will be given for evidence of familiarity with the spoken language.

German.—JOYNES' German Reader (or equivalent amount), together with German Accidence and translation into German as in the First part of Vandersmissen's German Grammar (or equivalent amount).

Greek.—XENOPHON, Anabasis, Book I.; Greek Grammar.

Latin. —CÆSAR, Bell. Gall., Books I. and II.; and Virgil, Aeneid, Book I.; Latin Grammar.

In both Greek and Latin, Translation at sight and Prose Composition (sentences or easy narrative, based upon the prescribed prose text) will be required.

At the September, but not at the June, examination, other works in Greek or Latin equivalent to those specified may be accepted, if application be made to the Professors of Classics at least a fortnight before the day of examination.

Botany.— As in Groom's Elementary Botany, Penhallow's Guide to the Collection of Plants, and Blanks for Plant Description.

Credit will be given for plant collections.

Note.—Any plant of the same family may be substituted for any one of those specified in Part II. of Groom's Elementary Botany, according to requirements of the locality.

Chemistry.—Elementary Inorganic Chemistry, comprising the preparation and properties of the chief non-metallic elements, and their more important compounds, the laws of chemical action, combining weights, etc. (As in Remsen's "Elements of Chemistry," pp. 1-160.)

Physics.—(As in Gage's Introduction to Physical Science, Chapters I., II., III., IV. and V.)

Physiography —The elements of the Science (As in Tarr's First Book of Physical Geography, *or* Hinman's Eclectic Physical Geography, or other text-book covering the same ground)

GENERAL REGULATIONS.

Candidates, who at the examination for Associate in Arts have passed in the above subjects, are admitted as Undergraduates.

Candidates who have passed Academy Grade II. of the Province of Quebec, or the Preliminary Subjects of the Associate in Arts, will, on entrance, be exempt from examination in English Grammar, Dictation, English History and Arithmetic.

Candidates who fail in one or more subjects at the June examintion, or who have taken part only of the examination and present themselves again in the following September, will be exempted from re-examination in those subjects only in which the examiners may have reported them as specially qualified.

At the June examination, candidates from Ontario may present an equivalent amount from the books prescribed for the Junior Matriculation Examination of the University of Toronto.

The Matriculation or Junior Leaving Examination accepted by the Universities of Ontario, and the Leaving Examinations of Nova Scotia, are accepted by the Faculty in so far as the subjects of their programme satisfy the Examiners of the Faculty, *i. e.*, when the subjects taken are the same as, or equivalent to, those required in McGill University.

Candidates who pass an examination at entrance in Freehand Drawing, equivalent to the First Year examination, may, on the recommendation of the examiner, be exempted from this subject in the First Year.

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§ IV. EXAMINATIONS.

1. Faculty Examinations.

There will be a Christmas examination for Students of the First Year in all the subjects, and for Students of the other years in such subjects as shall be determined by the Faculty. A sessional examination in all the subjects will be held at the end of the First and Second Years.

2. University Examinations.

I. FOR THE DEGREE OF BACHELOR OF SCIENCE.

(*a*) There will be a Primary examination at the end of the Third Year in all the subjects of that year. Candidates must pass this Examination before entering the Final Year.

(*b*) There will be a Final examination for the degree of Bachelor of Science at the end of the Fourth Year in all the subjects of that year.

Successful Students will be arranged in order of merit.

II. FOR THE DEGREE OF MASTER OF SCIENCE.

Bachelors of Arts or Bachelors of Science of at least one year's standing who shall have taken for one year a Graduate Course of Study in the Faculty of Arts or the Faculty of Applied Science of the University previously submitted to and approved by the Faculty, shall have passed an examination at the end of the year, shall, if required by the Faculty, have presented a satisfactory thesis, and shall have performed such

other exercises as may be prescribed to that end; or Bachelors of Arts or Bachelors of Science of at least two years' standing who shall have presented a satisfactory thesis, shall have passed a special examination for the degree, and shall hnave performed such other exercises as may be prescribed to that end;—the whole to the satisfaction of the Faculty of Arts or the Faculty of Applied Science as the case may be and also of any other Examiners whom the Corporation may associate with the Faculty—shall be entitled to the Degree of Master of Science. The Diploma and the Records of the University shall indicate, in special terms, that the Degree is conferred on the recommendation of the Faculty of Arts or the Faculty of Applied Science, as the case may be.

III. FOR THE DEGREE OF DOCTOR OF SCIENCE.

11.—Masters of Arts or Masters of Science or Doctors of Medicine, who, being Graduates of at least five years' standing, shall have distinguished themselves by special research and learning in the domain of Science, shall have presented a satisfactory thesis or published work, and shall have performed such other exercises as may be prescribed to that end; —the whole to the satisfaction of a standing committee consisting of such members of the University as the Corporation may in that behalf appoint—shall be entitled to the Degree of Doctor of Science.

IV. SPECIAL PROVISIONS FOR OBTAINING THE TWO DEGREES OF BACHELOR OF ARTS AND BACHELOR OF SCIENCE IN SIX YEARS.

The Regulations heretofore in force have been modified so as to enable Students to take the two degrees of B.A. and B.Sc. in six years, as follows:—

1. Students who have passed the Intermediate in Arts may enter the First Year of the Applied Science Course, and will be exempted from the modern languages which they have already taken in Arts.

2. The remaining subjects required for the B.A. degree may be spread over three years instead of two.

3. The Faculty of Arts will accept the Mathematical Physics of the Applied Science Course in lieu of the Mathematical Physics of the Arts Course.

4. The Faculty of Arts will accept the Laboratory Work in Physics in lieu of the Natural Science of the Arts Course.

A certificate of Licentiate in Arts will be given along with the degree in Science to those who, previous to entering the Faculty of Applied Science, have completed two years in the Faculty of Arts, and have duly passed the prescribed examinations therein, but who do not wish to proceed to the degree of B.A.

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§ V. GRADUATE COURSES.

Students who take the Bachelor's degree in one of the courses provided by the Faculty of Applied Science may graduate in any of the remaining courses by attending one or more subsequent sessions.

Graduates may also take an advanced course in the branch in which they have received their degree. On passing an examination at the end of such advanced course, the Master's degree will be conferred without further examination, on presentation at the end of one additional year of a satisfactory thesis on approved work.

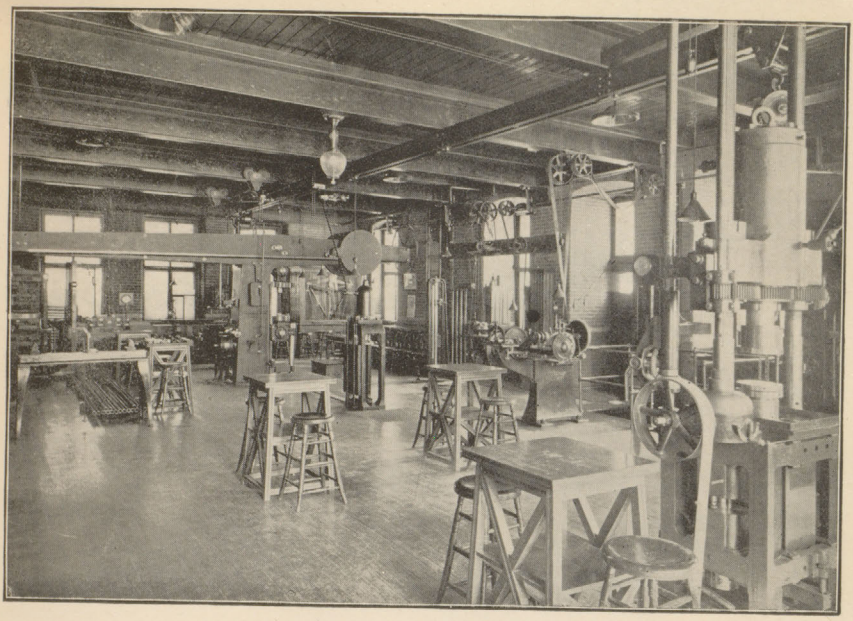
Students are strongly recommended to take a Graduate Course, and special arrangements will be made for advanced and research work in the following:—

In Architecture—Advanced study in design. (See § XIII, 1.)

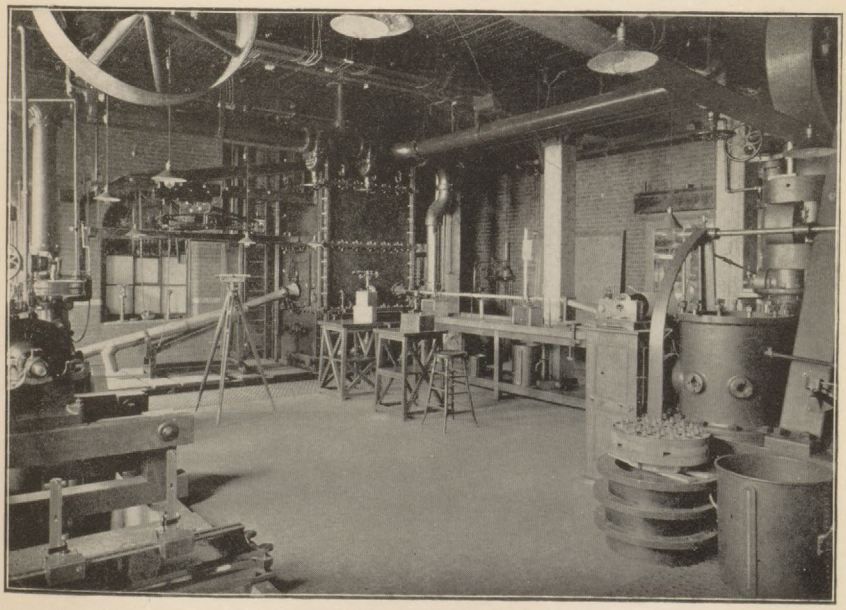
In Chemistry and Mineralogy. (See § XIII., 8, 9 and 11, and § XIV., 4.)

In the determination and comparison of the errors and the co-efficients of standards of length. (See § XIII., 3, and § XIV., 11.)

In the determination of gravity. (See § XIV., 11.)



An Engineering Testing Laboratory.



Hydraulic Laboratory.

The elasticity and strength of materials. (See § XIII., 2, and § XIV., 17.)

In Mining and Metallurgy—Advanced study in metallurgy and ore dressing can be carried on with great advantage in the new laboratories. (See § XIII., 8, and XIV., 13.)

The efficiency of pumps and hydraulic motors. (See § XIII., 2, and § XIV., 12.)

The efficiency of power transmission by air, water, gas, steam and electricity. (See § XIII., 2, 6, 7.)

The efficiency of steam, gas, oil and hot-air engines and of refrigerators. (See § XIII., 7 and 10.)

The efficiency of machines and machine tools, and the power absorbed by the several processes of mechanical work, (See § XIII., 7.)

The efficiency of dynamometers, belting and shafting, including investigations into the relative merits of the several unguents. (See §XIII., 7.)

The efficiency of the several types of boilers, including investigations on the heat-producing power of the several fuels. (See § XIII., 10.)

On the efficiency of dynamos and electric motors. (See § XIII., 6, and § XIV., 6.)

The flow of water through orifices and pipes, and over weirs. (See § XIII., 2, and § XIV., 8.)

In Geodesy and practical astronomy. (See § XIV., 7.)

In street railway design and theory, and in alternating apparatus. (See § XIII., 6, and § XIV., 6.)

In Physics.—The Macdonald Physics Building has been equipped and arranged with special reference to Graduate Courses and original research work in various branches of pure Physics. Every facility will be afforded in the workshops for the construction of special apparatus required for such investigations. (See § XIV., 16.)

In Mathematics.—Students taking Graduate Courses will receive guidance in any advanced Mathematics required in connection with their work.

§ VI. ATTENDANCE AND CONDUCT.

1. Absence from any number of lectures can only be excused by necessity or duty, of which proof must be given, when called for, to the Faculty. The number of times of absence, from necessity or duty, that shall disqualify for the keeping of a session, shall in each case be determined by the Faculty. Any Professor may, at his discretion, refuse credit for attendance, on the ground of lateness, inattention or disorderly conduct.

2. Any student who does not report his residence on or before November 1st in each year is liable to a fine of one dollar. All subsequent changes of address must be immediately reported to the Dean.

3. Every student is required to deposit with the Secretary of the University the sum of $5 as caution money for damage done to the furniture, machinery or other apparatus, and also for loss of and damage to books belonging to the University. In the case of improper or disorderly conduct in the University buildings or grounds, the Faculty may impose such penalty as may be deemed advisable, and may also inflict fines, to be deducted, if the Faculty thinks fit, from the caution money.

If individual responsibility for damage cannot be traced, a *pro rata* assessment will be made over all the students more directly concerned.

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§ VII. LIBRARY.

Librarian:—C. H. Gould, B.A.

Assistant Librarian:—H. Mott.

1. During the College Session the University Library is open daily (except on Sundays and general public holidays) from 9 a.m. till 5 p.m.; and the Reading Room from 9 a.m. till 6 p.m., and also from 7.30 till 10.30 p.m. On Saturdays, both Library and Reading Rooms close at 5 p.m. During vacations, both Library and Reading Rooms close at 5 p.m., and on Saturdays at 1 p.m.

2. Graduates in any of the Faculties, on making a deposit of $5, are entitled to the use of the Library, subject to the same rules and conditions as Students.

3. No borrowers other than a Professor or Lecturer may keep any book belonging to the Library longer than two weeks, on penalty of a fine of 5cts a volume for each day of detention, but any borrower may renew the loan of a book for fitting reasons. A borrower

incurring fines beyond the sum total of $1 shall be debarred from the use of the Library until they have been paid.

4. Before leaving the Library, readers must return the books they have obtained, to the attendant at the Delivery Desk.

All persons using books remain responsible for them, so long as the books are charged to them, and borrowers returning books must see that their receipt for them is properly cancelled. Damage to or loss of books shall be made good to the satisfaction of the Librarian and of the Library Committee. Writing or making any mark upon any book belonging to the Library is unconditionally forbidden. Any persons found guilty of wilfully damaging any book in any way shall be excluded from the Library, and shall be debarred from the use thereof for such time as the Library Committee may determine.

5. Silence must be strictly observed in the Library.

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§ VIII. PETER REDPATH MUSEUM.

1. The Museum will open every lawful day from 9 a.m. till 5 p.m., except when closed for any special reason by order of the Principal or Committee.

2. Students can obtain tickets of admission from the Principal on application.

3. Students are to enter by the front door only, except when going to the lectures.

4. Any student wilfully defacing or injuring specimens, or removing the same, will be excluded from access to the Museum for the session.

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§ IX. FEES.

The total fees for Undergraduates are $155.00 per annum, and this amount includes the fees for Tuition, Library, Matriculation, Graduation, Laboratories, Workshops, Gymnasium, Grounds, wear and tear of Apparatus, etc., etc.

The Matriculation fee of $5.00 (included in the $155.00 fee) must be paid to the University Secretary previous to the examination.

Deposit for caution money (see § VI.), $5.00.

Partial Students will be admitted to the Professional Classes

in any year on payment of the ordinary fees for that year; or they may attend the lectures on any subject on payment of a special fee, which, unless otherwise specified, is $12.50 for each term, or $25.00 for the whole session.

Special Laboratory Fees.—Partial Students desirous of taking Courses in any of the several Laboratories will be required to pay a fee of $25.00 for each Course.

Special Workshop Fees.—Partial Students desirous of taking the workshop courses will be required to pay the following fees, which include cost of materials and use of all tools :—

1 day, or 7 hours per week for the whole Session from September to April :					$25 00
2 days, or 14	"	"	"	"	45 00
3 days, or 21	"	"	"	"	60 00
4 days, or 28	"	"	"	"	70 00
Fee for Supplemental Examination, at date fixed by Faculty					2 00
" " if for any special reason granted at any other date than that fixed by the Faculty					5 00
Fee for a certificate of standing					2 00

The fees must be paid to the Secretary, and the receipts shown to the Dean, within fourteen days after the commencement of attendance in each Session. In case of default, the Student's name will be removed from the College books, and can be replaced thereon only by permission of the Faculty, and on payment of a fine of $2.

The fee for a Graduate Course is $150.00. Graduates of this Faculty will be required to pay only one-half of this amount.

Fee for the Degree of Master of Science (M.Sc.)	$20 00
Fee for the degree of Doctor of Science (D.Sc.). .	80 00

If for any special reason the Bachelor's or Master's degree be granted *in absentia* the fee will be $40.00.

§ X. MEDALS, EXHIBITIONS, PRIZES AND HONOURS.

1. The British Association Medals and Exhibition, founded by the British Association for the Advancement of Science, in commemoration of the meeting held in Montreal in the year 1884.

A British Association Medal and Prize in Books are open for competition to students of the Graduating Class in each of the six Departments of the Faculty, and, if the examiners so recommend, will be awarded to the student taking the highest position in the final examinations.

2. The Governor General's Silver Medal (the gift of His Excellency The Right Honourable the Earl of Minto).

This Medal will be awarded for graduate Research Work.

3. Summer Work. (See § XI., 1.) The following prizes are offered for the best summer Theses:—

To the students of the Civil Engineering Course a prize of $25 presented by Alex. McFee, Esq.

To the students of the Electrical Engineering Course a prize of $25 presented by E. B. Greenshields, Esq., B.A.

To the students of the Mechanical Engineering Course a prize of $25 presented by Robert Gardner, Esq.

To the students of the Mining Engineering Course, a prize of $25 presented by Messrs. Fraser & Chalmers.

To the students of the Architectural Course a prize of $25 presented by A. T. Taylor, Esq., F.R.I.B.A., R.C.A., Past President of Quebec Architects' Association.

Two prizes of $35 and $15 offered by the General Mining Association of the Province of Quebec will be open for competition to students from McGill University, Toronto University and Queen's University, and will be awarded to the two students presenting the best Summer Theses on some subject connected with mining. Preference will be given to those Theses which show decided originality.

The following Exhibitions and Prizes will be open for competition at the beginning of the Session. *Students are required to notify the Dean of their intention to compete, at least one week before the commencement of the Examination.*

4. A Scott Exhibition of $50.00 and a British Association prize of $25.00 to the Students entering the Fourth Year, the subjects of examination being the Mathematics and Theory of Structures of the Ordinary Course.

5. Three prizes of $25.00, $15.00 and $10.00, to Students entering the Third Year, the subject of Examination being: --the Mathematics of the Second Year Course.

6. A Scott Exhibition of $50.00, founded by the Caledonian Society of Montreal, in commemoration of the Centenary of Sir Walter Scott, and two prizes of $25.00 and $15.00 to Students entering the Second Year, the subjects of Examination being:—

(*a*) English Literature (Summer Vacation work.) (*b*) Mathematics of the First Year Course. (*c*) Descriptive Geometry of First Year Course.

8. Two Prizes, each of $10.00, presented by J. M. McCarthy, Esq., B.A.Sc., to Students entering the Third Year, for proficiency in Levelling or Transit Work.

9. The sum of $150, presented by W. A. Carlyle, Esq., M.A., may be awarded in prizes to students of the Mining Course taking the highest positions in the degree examinations of 1900.

10. A prize (or prizes) to the amount of $50, presented by Messrs. Waddell, M.A.Sc., and Hedrick, Civil Engineers, Kansas City, Mo., may be awarded for the best structure designs, prepared by the graduating class of 1900.

11. Three prizes, of $10.00, $6.00 and $4.00, presented by A. C. Hutchison, Esq., R.C.A., will be awarded to the three undergraduates taking the highest standing in the Freehand Drawing of the First Year.

12. A scholarship of the value of $100, for proficiency in Practical Chemistry, on the endowment of the late Dr. T. Sterry Hunt, to students entering the Second Year of the Chemical Course. For further conditions apply to the Dean.

13. Prizes or certificates of merit are given to such Students as take the highest place in the Sessional and Degree Examinations.

14. Honours.—On graduation, Honours will be awarded for advanced work in Professional subjects.

15. Science Scholarships granted by Her Majesty's Commission for the Exhibition of 1851.—The Scholarships of £150 sterling a year in value are tenable for two or, in rare instances, three years. They are limited, according to the Report of the Commission, "to those branches of Science such as Physics, Mechanics and Chemistry) the extension of which is specially important for our national industries." Their object is, not to facilitate ordinary collegiate studies, but "to enable Students to continue the prosecution of Science with the view of aiding in its advance or in its application to the industries of the country."

A nomination to one of these scholarships for the year 1899 was placed by the Commission at the disposal of McGill University, and another may be granted in 1901.

It is open to Students of not less than three years' standing in the Faculties of Arts or Applied Science, and is tenable at any University or at any other Institution approved by the Commission.

This Exhibition has been awarded as follows:—

Evans, P. N., 1891 Macphail, J. A., 1893. King, R. O., 1895.
Gill, J. L. W., 1897 McLean, W. B., 1899.

16. The Mason prize of $50,00 in Electrical Engineering, given by Dr. A. F. Mason for original investigation in the practical application of Electricity.

17. Workshop Prizes.—A prize of $20.00, presented by C. J. Fleet, B.A., B.C.L., for bench and lathe work in the woodworking department, open to Students of not more than two terms' standing in workship practice.

XI. SPECIAL PROVISIONS.

1. Summer Work.—During the summer vacation following the close of each year, all students entering the Third and

Fourth Years are required to prepare a thesis on a subject specified by the Faculty. Any student may substitute for the specified subject a report on some practical work in course of construction. The marks given for these theses will be added to the results of the sessional examinations. The theses must be handed in to the Dean on or before September 21st.

2. All Students in the Architectural, Civil, and Mining Engineering Courses, entering the Second and Third Years, and Students in the Civil Engineering Course entering the Fourth Year, are required to be in attendance at the University on the 1st September, when the Field-work in Surveying will commence. (See § XIII., 3.)

3. All Students in the Mining Course are required to attend the Summer School in Mining, held between the Third and Fourth Years (four to six weeks of field-work), and students between the Second and Third Years are advised to do the same if practicable. The school is held in May and June.

4. Partial Students may be admitted to the professional classes upon payment of special fees. (§ IX.)

5. Students in Applied Science may, by permission of the Faculty, take the Honour Classes in the Faculty of Arts.

6. Undergraduates in Arts of the Second and Third Years, or Graduates of any University, entering the Faculty of Applied Science, may, at the discretion of the Professors, be exempted from such lectures in that Faculty as they have previously attended as Students in Arts.

7. Students who have failed in a subject in the Christmas or Sessional Examinations may regain their standing by passing a supplemental examination at a time appointed by the Faculty. Unless such supplemental examination is passed, Students will not be allowed to proceed to any subsequent examination in the subject. A second supplemental examination will not be granted unless under exceptional circumstances, to be investigated in each case by the Faculty.

8. Students may be required to answer satisfactorily a weekly paper on such subjects of the course as the Faculty may determine.

9. Credit will be given in the Sessional Examinations for work done during the session in certain of the subjects which will be specified at the commencement of the first term.

10. Students who fail to obtain their Session, and who in consequence repeat a Year, will not be exempted from examination in any of those subjects in which they may have previously passed, except by the express permission of the Faculty. Application for such exemption must be made at the commencement of the Session.

11. Partial Students are not eligible for prizes.

12. Certificates may be given to Students who have passed through any of the special courses attached to the curriculum.

13. The headquarters of the Canadian Society of Civil Engineers are located in Montreal. The Society holds fortnightly meetings, at which papers upon practical current engineering subjects are read and discussed. Undergraduates joining the Society as Students may take part in these meetings, and acquire knowledge of the utmost importance in relation to the practical part of the profession.

14. Caps and gowns, also the overalls for the workshops, may be obtained from the janitor of the Engineering Building.

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§ XII. SPECIAL LECTURES.

In addition to the ordinary work of the Faculty, the following courses of special lectures were delivered during session 1898-99:—

A. B. Kennelly, Ph.D. (Phila.), a series of lectures on "Submarine Telegraphy."

Walter B. Snow (Boston), on "Efficiency of Mechanical Draft."

Under the auspices of the Applied Science Society:—

J. Wallace Walker, Ph.D., on "New Gases of the Atmosphere."

J. W. Bell, B.A.Sc., on "The Metallurgy of Copper and Lead."

G. A. McCarthy, B.A.Sc., and E. G. Matheson, B.A.Sc., on "Rope Testing."

J. M. McCarthy, B.A.Sc., on "Foundations of the S. S. Railway Bridge at Sorel, P.Q.

Arthur Weir, B.A.Sc., on "History of Transportation in Canada."

E. Rutherford, B.Sc., on "Wireless Telegraphy."
Also, under the auspices of the McGill Mining Society:—
J. F. Johnston, B.A., on "The Manufacture of High Explosives."
N. Norton Evans, M.A.Sc., on "Mining in Freiberg, Saxony."
Captain J. J. Riley, on "Mining in Peru in the Sixties."
W. Adams, B.A.Sc., on "Mining in British Columbia."
J. W. Sword, Esq., on "Mining Machinery in British Columbia."
C. C. Hansen, M.E., on "New Electric Power Plant at the War Eagle Mines, Rossland, B.C."

XIII. COURSES OF LECTURES.

N.B.—The following courses are subject to such modifications during the year as the Faculty may deem advisable.

1. ARCHITECTURE.

Professor:—S. Henbest Capper, M.A. (Macdonald Professor of Architecture.)

Lecturer:—H. F. Armstrong.

The Architectural Course begins in the second year, for which the first year is preparatory, especially in the departments of Mathematics and Drawing (Freehand, Lettering and Projections).

The work of the second year is of a general character, and is planned to combine to some extent the work of the Architectural and of the Civil Engineering students.

The third and fourth years are devoted to more specialized architectural study in various branches, and a fifth or graduate year will be organized for advanced study in design. For those students who desire to devote themselves more especially to the engineering side of architecture, the course is modified to include additional Mathematics in the third year, and the advanced course of Theory of Structures in the fourth year. Such students devote proportionately less time to architectural drawing and designing.

In the second year the Historical Course embraces a rapid résumé of Architectural History from ancient Egyptian to modern times. The great eras of European civilization are successively dealt with, and the evolution of styles is traced in their constructional and ornamental forms and methods.

In the third and fourth years the historical lectures are arranged in continuation and extension of this general course, Renaissance



A Room in the Architectural Department

and Modern Architecture being specially studied in the third year. The fourth year comprises more detailed courses upon Ecclesiastical, Domestic and Public Architecture, dealing with the historic evolution of architectural styles and with the problems and requirements of modern work.

The constructive side of architecture is dealt with in the Architectural Engineering Courses.

In the second year a general course, common to all architectural and engineering students, is given upon Building Construction and Materials, which is supplemented and continued in the Testing Laboratories, where practical experiments are conducted.

The Theory of Structures is dealt with, as also Municipal Engineering and Sanitation and Hygiene, Heating and Ventilation, and Electric Installation.

Specifications, including Working Drawings and Architectural Practice, are dealt with in the third and fourth years.

For the scientific requirements of the profession the courses in Mathematics are very fully developed, and include Descriptive Geometry, Shades and Shadows and Perspective; Surveying is also studied.

Instruction in Drawing is given during all four years—Freehand Drawing (ornament and figure) from the cast, and Architectural Drawing occupying much of the students' time during three years of the course. Modelling in clay is included in the third and fourth years.

Problems in Architectural Design form the basis of work in the Architectural Drawing class from the earliest available period, and are combined with the study of the Classical Orders.

A course of lectures is included upon General Art History, so as to place the architectural student in touch, not only with the decorative details of the different architectural styles, but also with contemporary forms in other branches of art, especially the decorative arts employed in building.

The special courses of study are as follows:—

1. General Architectural History.—T., 10; W., 11; Second Year (1st term) Ancient Egypt; Greece; Rome; Byzantine and Early Christian Architecture. (2nd term) Romanesque; The Monastic Orders; Gothic; The Renaissance and Neo-classic.
2. Renaissance and Modern Architecture.—T., 9; W., 12; Third Year. (1st term) The Renaissance in Italy and Spain. (2nd term) France; England; Colonial and Modern.
3. Domestic, Public and Ecclesiastical Architecture.—F., 9; Fourth Year, Historical résumé; modern conditions and requirements.

4. Theory of Architecture.—M, 10; Second Year. The Orders of Architecture, arcading, mouldings, etc. Composition; elements of architectural effect; style.
5. Art History.—M., 9; Third and Fourth Years together. Sculpture; Painting; The Industrial Arts.
6. Drawing and Modelling:
   (*a*) Freehand Drawing from the cast (ornament and figure). 4 hrs., Second Year; 6 hrs., Third and Fourth Years. About 2 hrs. additional time for water-color work, etc., in Fourth Year.
   (*b*) Architectural Drawing and Design.—9 hrs., Second Year. Studies of the orders and order-problems; architectural rendering with brush and pen.
   12 hrs., Third year; 18 hrs., Fourth Year.—Problems in design.
   (*c*) Modelling, 3 hrs. (one term) Third and Fourth Years. Architectural ornament modelled in clay from the cast.
7. Building Construction.—Th., 11; Second Year. Lectures and Exercises.
8. Specifications and Contracts.—Th., 9; Third and Fourth years together. General conditions of contract; specifications for various trades; professional practice.
9. Hygiene.—F., 12 (2nd Term); Third and Fourth Years together. Principles of sanitation and house-drainage; ventilation; heating; electric installation.
10. Municipal Engineering.—W., 12; Third and Fourth Years alternately. Sewage of Cities and Towns.

Architectural Equipment.

The architectural equipment consists of a representative collection of casts of architectural detail and ornament and sculpture; of photographs and illustrations; an arc-light electric lantern; a large collection of slides, diagrams and models; and a library for architectural study. (See § XV.).

Women Students.

The Architectural, Freehand Drawing and Modelling Classes are open to Women Students. Information as to admission may be obtained on application to the Dean of the Faculty or to the Professor of Architecture.

2. CIVIL ENGINEERING AND APPLIED MECHANICS.

Professor:—Henry T. Bovey, M. Inst. C. E. (Scott Professor of Civil Engineering and Applied Mechanics).

Assistant Professors:—R. S. Lea, Ma.E.
E. G. Coker, B. Sc., A.M. Inst. C.E.

Theory of Structures.

The lectures on this subject embrace:—

(*a*) The analytical and graphical determination of the stresses in the several members of framed structures, both simple and complex, as, *e.g.*, cranes, roof and bridge trusses, piers, etc.

(*b*) The methods of ascertaining and representing the shearing forces and bending moments to which the members of a structure are subjected.

(*c*) A study of the strength, stiffness and resistance of materials, including a statement of the principles relating to work, inertia, energy and entropy, together with a discussion of the nature and effect of the different kinds of stress and the resistance offered by a material to deformation and to blows.

(*d*) The design and proper proportioning of beams, pillars, shafts, roofs, bridge piers and trusses, arches, arched ribs, masonry dams, foundations, earth works and retaining walls.

Graphics.—A complete course of instruction is given in the graphical analysis of arches and of bridge, roof and other trusses, and in the graphical solution of mechanical problems. It is therefore possible for the student to apply both the analytical and graphical methods of treatment, and thus to verify the accuracy of his calculations.

Text-Book.—Bovey's Theory of Structures and Strength of Materials.

The Laboratory Work (see also § XIV.) is as follows:—

Fourth Year.—During the Fourth Year students are expected to engage in a research upon the physical properties of a material of construction, with special reference to the form and position of such material in the structure.

During session 1898-99, theses have been prepared on the following:—

(*a*) The effect upon steel bars of combined torsion and tension;

(*b*) The effect of the size of a concrete cube upon its strength;

(*c*) The strength of rollers;

(*d*) The influence of annealing on the tensile strength of copper under repeated stresses;

(*e*) The torsional rigidity of round and square steel bars.

THIRD YEAR.—During the Third Year the laboratory work includes the following:—

(*a*) The Testing of Timber.—Transverse tests of hard and soft timber beams; compressive, bearing, tensile, shearing and torsional tests of specimens from the same beams.

(*b*) The Testing of Iron, Steel and Alloys.—Tensile tests of cast iron, wrought iron and steel beams; tensile, compressive and torsional tests of specimens of mild steel, cast steel, cast iron and alloys.

(*c*) The testing of Bricks, Stones, Slates, etc.—Compressive, absorption and rumbling tests of bricks and stones; transverse, compressive and shearing tests of slates and other materials.

(*d*) The Testing of Concrete and Cement.—Complete tests of concretes and cements, in accordance with the standard methods.

(*e*) Notes on the characteristics, uses, life, methods of preservation, etc., and special tests of the various materials of construction.

BRIDGE CONSTRUCTION.

A course of lectures is given on practical bridge construction, including:

(*a*) The reasons governing the selection of a particular type of bridge;

(*b*) A discussion of the loads to which the bridge will be subjected;

(*c*) The calculations of the stresses in the several members of the bridge.

(*d*) The determination of the sectional areas and forms of the members;

(*e*) The design of the connections;

(*f*) The preparation of complete engineering drawings.

HYDRAULICS.

The Student is instructed in the fundamental laws governing the equilibrum of fluids, and in the laws of flow through orifices, mouthpieces, submerged (partially or wholly) openings, over weirs, through pipes and in open channels and rivers. The impulsive action of a free jet of water upon vanes, both straight and curved, is carefully discussed, and is followed by an investigation of the power and efficiency of the several hydraulic motors, as, *e.g.*, Reaction Wheels, Pressure Engines, Vertical Water Wheels, Turbines, Pumps, etc.

TEXT-BOOK.—Bovey's Hydraulics.

The laboratory work (see also § XIV.) will include the following:—

(*a*) *Flow through orifices.*—The determination of the coefficients of discharge velocity, etc.

(*b*) *Flow over weirs.*—The determination of the coefficient of discharge with and without side contraction. Also the measurement of the section of the stream.

(*c*) *Flow through pipes.*—The determination of the effect upon the flow, of angles, bends and sudden changes in section.

(*d*) *Impact.*—The determination of the coefficient of impact.

(*e*) *Motors, etc.*—The determination of the efficiency of Pelton and other wheels, of vortex and other turbines, of centrifugal and other pumps, etc.

Hydraulic Machinery.

The lectures in this Course are of a descriptive character, including the details of construction of Vertical and Horizontal Water Wheels, Three Cylinder Engines, Pumps, Accumulators and Presses, Workshop Tools and Appliances, Dock and Harbour Machinery and the Transmission of Power.

Transmission and Distribution of Power.

A special course of lectures on the transmission and distribution of power will be delivered during the term, and will embrace the following:—

(*a*) Transmission and distribution by wire ropes, compressed air, and steam.

(*b*) Electrical transmission and distribution.

(*c*) Hydraulic transmission and distribution.

Municipal Engineering.

The lectures on this subject will embrace:—

(*a*) *Water Supply.*—The quantity and quality of water; systems and sources of supply; rainfall and evaporation; storage as related to the supplying capacity of water-sheds; natural and artificial purification; distribution, including the location of mains, hydrants, stop-valves, etc., combined or separate fire and domestic systems; details of construction, including dams, reservoirs, pumps, etc., preliminary surveys, estimates of cost, statistics, etc.

(*b*) *Sewerage of Cities and Towns.*—The various systems for the removal of sewage; special methods in use for its treatment and ultimate disposal; the proportioning and construction of main, branch and intercepting sewers; manholes, flush-tanks, catch-basins, etc.; materials used in construction; estimates of cost.

Elements of Building Construction and Foundations.

Lecturers:—Professors Capper and Lea.

These lectures will treat of:—

(*a*) Brick and stone masonry.
(*b*) Timber framing; flooring, beams, columns, centering, etc.
(*c*) Iron and steel framing; girders, columns, etc.
(*d*) Fire-proof and slow-burning construction.
(*e*) The bearing power of the various soils, rocks, etc., as they occur in Nature.
(*f*) The stability and character of the underlying material at any given site, taking into account the effect of frost, erosion, etc.
(*g*) The construction of different kinds of foundations, both on land and in water, by piling, dredging, coffer dams, open and pneumatic caissons, freezing, etc.

3. SURVEYING, GEODESY AND TRANSPORTATION.

Professor:—C. H. McLeod, Ma.E.
Lecturer:—J. G. G. Kerry, Ma.E.

Surveying and Geodesy.

This course is designed to give the student a theoretical and practical training in the methods of land and geodetic surveying, in the field work of engineering operations, and in practical astronomy. The course is divided as follows:—

Second Year.—Chain and angular surveying; the construction, adjustment, use and limitations of the various instruments. Underground surveying. Topography, levelling, contour surveying. Simple curves and setting out work. Descriptions for deeds. General land systems of the Dominion and Provinces.

Third Year.—Construction surveying, including the location of roads, transition curves, setting out work and calculation of quantities. Geodetic, trigonometric and barometric levelling. Topographic and photographic surveying. Hydrographic surveying. Introduction to practical astronomy. Graphical determination of spherical triangles, spherical projections, construction of maps.

In the field the students of the Second and Third Years are required to carry out the following:—(1) A chain survey. (2) A chain and compass survey. (3) A pacing survey. (4) A compass and micrometer survey. (5) A contour survey. (6) A plane table survey. (7) A survey and location of a line of road with determination of topography and contours and subsequent staking out for construction.

(8) A hydrographic survey of a river channel, including measurement of discharge. (9) A survey at night illustrating underground methods. Astronomical observations with sextant and engineer's transit.

All students are required to keep complete field notes, and from them prepare maps, sections and estimates of the work.

The large drawing rooms are furnished with fixed mountings for the various instruments, in order to permit of their use and investigation during the winter months.

FOURTH YEAR.—Practical Astronomy:—the determination of time, latitude, longtitude and azimuth. Geodesy :—figure of the earth ; measurements of base lines and triangulation systems; adjustments and reductions of observations.

The field work of the Fourth Year consists in the measurement of a base-line, in triangulations and precision levelling.

The practical work in astronomy (for equipment of observatory see XIV, Art 11) comprises: (1) Comparisons of clocks and chronometers. (2) Determination of meridian by solar attachment. (3) Meridian, latitude and time by solar and stellar observations with the engineer's transit. (4) Latitude and time by sextant. (5) Time by astronomical transit. (6) Latitude by zenith telescope. (7) Latitude by transit in prime vertical.

Field work is required of all students of the Second and Third Years in the courses of Architecture, Civil and Mining, and of the Fourth Year in the Civil course. The work will begin on the first of September, and continue through the entire month. The surveys will be made in a place some distance from Montreal. Suitable provision for board and lodging will be arranged for at the place selected.

Exercises in the Geodetic laboratory (for equipment see § XIV., Art 11) carried out in the Fourth Year include the following:—(1) Measurement of magnifying power. (2) Determination of vernier errors. (3) Errors of graduation. (4) Measurement of eccentricity of circles. (5) Determination of errors of run of theodolite microscopes. (6) Investigation of the errors of a standard bar. (7) Graduating scales with the dividing engine, and comparison thereof on the comparator. (8) Investigation of the errors of circles on the circular comparator. (9) Determination of the constants of steel tapes. (10) Investigation of the graduation errors of steel tapes on the fifty-foot comparator. (11) Investigation of the errors of aneroid barometers. (12) Investigation of the errors of level tubes, and determination of their scale values. (13) Measurement of the force of gravity with a reversible pendulum. (14) Measurements of magnetic dip, declination and horizontal force.

The equipment of the surveying department comprises the follow-

ing, in addition to the apparatus of the Observatory and Geodetic Laboratory:—Eleven transit theodolites by various makers, with solar and mining attachments. A photo-theodolite, 8-in. alt-azimuth Seven dumpy and three wye levels. Hand levels and clinometers. Two precision levels. Five surveyors' compasses. Three prismatic compasses. Pocket compasses. One solar compass. Three marine sextants. Artificial horizons. Four box sextants. Two reflecting circles. Two large plane tables. Four traverse plane tables. Four current meters. Rochon micrometer. Double image micrometer. Field-glasses. Two heliotropes. Several barometers. 300 ft. and 500 ft. steel tapes suitable for base measurements. Steel chains and steel bands. Linen and metallic tapes. Sounding lines. Pickets. Levelling rods. Micrometer targets. Slope rods. Pedometers. Station pointer, pantographs, planimeter, slide rules and minor appliances.

Examinations for Land Surveyors:—Any graduate in the Faculty of Applied Science, in the Department of Civil Engineering and Land Surveying, may have his term of apprenticeship shortened to one year for the profession of Land Surveyor in Quebec or Ontario, or for the profession of Dominion Land Surveyor.

Text Books:—Gillespie's Surveying, Johnson's Theory and Practice of Surveying, Shortland's Nautical Surveying, Green's Practical and Spherical Astronomy, Nautical Almanac, Baker's Engineers' Surveying Instruments.

Transportation.

On Common Roads, Railways and Canals.

The lectures will embrace:—

(*a*) A brief historical review of the inception and carrying out of the great Canadian systems of transportation, and a resumé of the laws governing them.

(*b*) Common roads and streets.—Provision made for them in settling up land; the traffic for which they are suited, and the cost of hauling it over different surfaces; the materials used in their construction, and the merits and cost of the various systems.

(*c*) Canals and rivers.—The Canadian canal system, the methods and costs of construction and maintenance, the traffic it is designed to carry, and the cost of transportation.

(*d*) Steam railroads.—The traffic they serve and the cost of handling it, the details of location and the influence of physical features and trade possibilities upon it, and cost and design of construction, the duties of the engineer upon such work, the appliances at present in use for safe and speedy handling of trains.

(*e*) Electric roads.—The traffic which they now carry, their location and construction, the reasons for their rapid extention, and their probable future.

The questions of the development and applying of motive power and the various appliances, mechanical and electrical, now in use for these special purposes are taken up in special descriptive lectures in the mechanical and electrical departments.

4. DESCRIPTIVE GEOMETRY.

Lecturers:—C. H. McLeod, Ma.E.
H. F. Armstrong.

This course deals with the methods of representing objects on one plane so that their true dimensions may be accurately scaled. It discusses the methods employed in the graphical solution of the various problems arising in engineering design, and deals generally with the principles underlying all constructive drawing. The methods taught are in all cases illustrated by applications to practical problems. It is the aim of the work to develop the imagination in respect to the power of mentally picturing unseen objects, and incidentally precision in the use of the drawing instruments is attained.

First Year.—Geometrical drawing, orthographic projections, including penetrations, developments, sections, etc. Isometric projection.

Second Year.—Problems on straight line and plane. Projections of plane and solid figures. Curved surfaces and tangent planes. Intersections of curved surfaces. Axometric projections. Shades and shadows. Mathematical perspective and the perspective of shades and shadows.

5. FREEHAND DRAWING, LETTERING, ETC.

Assistant Professor:—H. F. Armstrong.

In the *Freehand Course*, the object is to train the hand and eye so that students may readily make sketches from parts of machinery etc., either as perspective drawing in light and shade, or as preparatory dimensioned sketches from which to make scale drawings.

In the *Lettering Course*, plain block alphabets, round writing and titles will be chiefly dealt with. In this course, also, tinting, tracing, blue printing and simple map drawing will be included.

6. ELECTRICAL ENGINEERING.

Professor:—R. B. OWENS, E.E. (Macdonald Professor of Electrical Engineering).

Lecturer:—L. A. HERDT, Ma.E., E.E.

The first two years of the Undergraduate course of instruction in Electrical Engineering are devoted mainly to preparation in mathematics, physics, chemistry, mechanics, drawing and shopwork, and work in the physical and chemical laboratories. The electrical studies of the Third Year consist of the principles of electro-magnetism and continuous current dynamo electric machinery—two lectures per week, the principles of electrical measurement—one lecture per week, and four periods of three hours each in the Physical and Electrical Engineering laboratories. The Fourth Year is devoted principally to electrical work. Lectures and recitations on alternating current phenomena, including the principles of action and design of alternating current machinery for lighting and power purposes—three lectures per week; electric lighting systems, including central station design and operation, street railways, electric power transmission, etc.,— three lectures per week; and three periods of three hours each in the electrical engineering laboratory. In the second term of the Fourth Year a choice may be made between the following options: electro-chemistry, advanced thermodynamics, hydraulics (second term). Each Fourth Year student is required to present a thesis giving the results of a suitable experimental investigation.

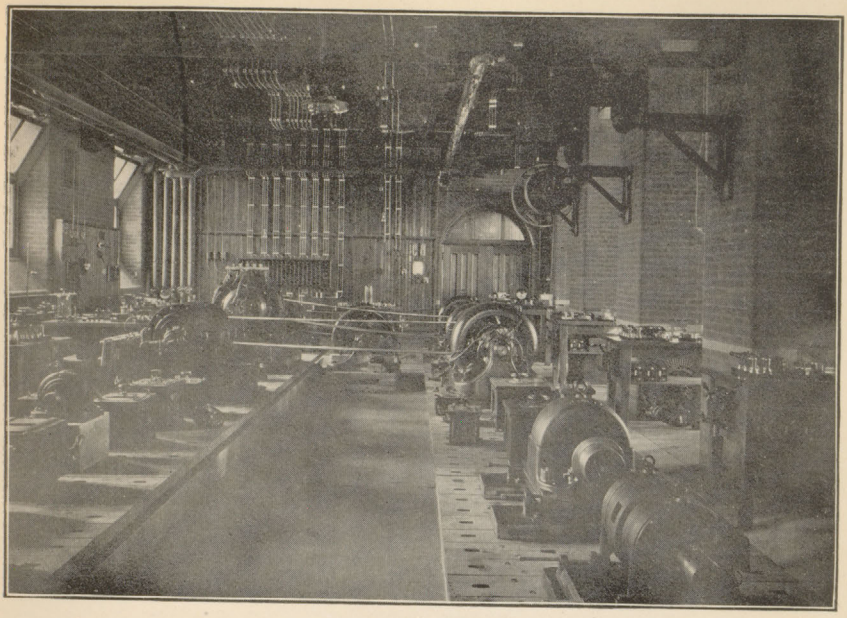
Undergraduate Courses.

1. Electro-Magnetism and the Magnetic Circuit. The theory and application of the laws of electro-magnetism and the laws of the magnetic circuit. T., Th., at 9. First term.

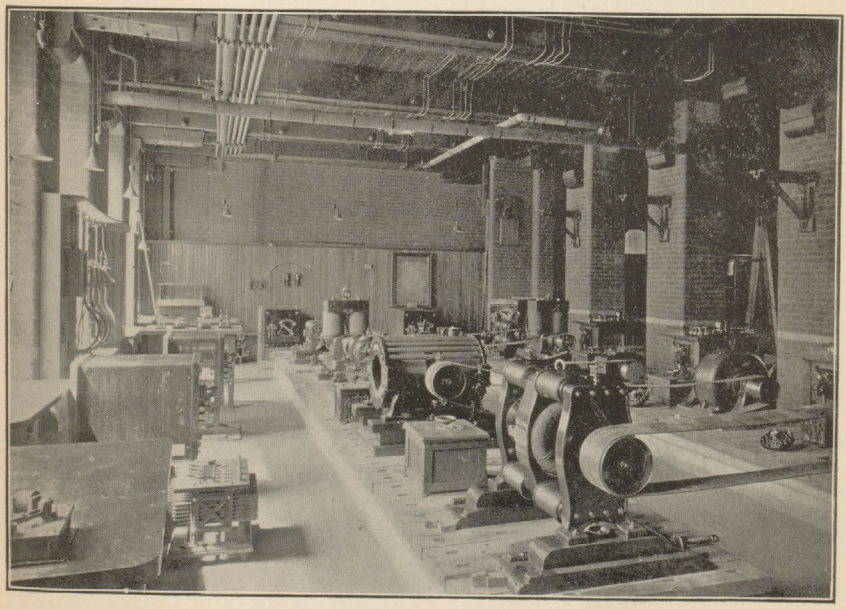
2. Direct Current Dynamo-Electric machinery. The principles of action of commutating and rectifying machines are discussed, and their practical design considered upon the general lines developed by Hopkinson and Kapp, and used by our best makers. Each student is required to design and make complete drawings of a direct current machine. T., Th., at 9. Second term.

3. Alternating Currents and Alternating Current machinery. Theoretical consideration of variable current flow in circuits containing resistance, inductance and capacity under different conditions. The principles of action of synchronous and induction apparatus. Complete designs of one of more types of alternating current machines are required. M., W., F., at 11. First and Second term.

4. Electric Lighting and Systems of Electric Distribution. The



In the Dynamo Rooms.



In the Dynamo Rooms.

location, design and operation of central and isolated lighting plants. The design and construction of distributing lines. Arc and incandescent lamps. The application of motors for general power purposes. Each student is required to design a lighting or power plant, making drawings and estimates for its construction, and to make a test of, or a report on, a commercial plant. T., W., F., at 10. First term.

5. Electric Railways and Electricity in Engineering Operations. The location, design and operation of power plants for city and inter-urban service; line and track construction, car equipment. Electric locomotives for special service, electricity in mining, ventilating, hoisting, etc. Station economics. T., W., F., at 10. Second term.

Experimental Car.—By the courtesy of the Montreal Street Railway Company, a special testing car, completely equipped for investigating the problems of tramway work, is available.

6. Electrical Engineering Laboratory:

(*a*) Includes such tests of direct current dynamos, motors, boosters, motor-generators, dynamotors, converters, open and closed coil constant current machines, and arc and incandescent lamps as illustrate the principles of their action. T., Th., 2-5. First and Second term.

(*b*) Includes similar tests upon alternators; synchronous motors, compensators and converters; transformers, potential regulator, reaction coils, frequency and phase-changing apparatus, etc. M., W., F., 2-5. First and Second terms.

7. Telegraphy and Telephony. Single, duplex, quadruplex and multiplex telegraph systems, telephone systems, current generation for telegraph and telephone work, central telegraph and telephone stations. Line construction and testing. Special systems of signalling. One lecture per week at time to be arranged. First term.

Graduate Courses.

8. Special problems in the theory and practice of alternating current working. Two lectures per week at time to be arranged. First and Second terms.

9. Advanced Laboratory Investigations. Special research work by students having necessary previous training.

10. Electrical Engineering Seminar. Weekly meetings are held, at which students present carefully prepared papers upon current engineering literature and special topics in connection with their studies or their laboratory work.

Transmission and Distribution of Power.

(See page 121.)

7. MECHANICAL ENGINEERING.

Professor:—R. J. Durley, B.Sc., Ma.E., A.M.Inst. C.E.
(Workman Professor of Mechanical Engineering.)
Lecturer:—H. M. Jaquays, M.A., M.Sc., A.M.Can.Soc. C.E.
Demonstrator.—.. .. ..

This course embraces four subjects of study, as follows:—

I. Descriptive Mechanism and Kinematics of Machinery.

A course of lectures, illustrated by the lantern, is given in the second year, introducing the subject of mechanism in general to the student. Beginning with elementary contrivances and common forms, the functions and principles of all kinds of ordinary mechanisms are explained; and the course concludes with detailed descriptions of prime movers, machine tools, locomotives, and other machinery.

The science of Kinematics applied to machinery is then taken up. Reuleaux's principles and classifications are followed, and illustrated by the fine and unique collection of models in the Museum. The synopsis of the course includes the following subjects: Definition of a machine. Lower Pairs. Kinematic chains and trains. Centrodes. Restraint. Higher Pairs. Force and chain closure. Dead points. Notation Analysis of the quadric crank chain, the slider-crank chain, the double-slider crank chain. Chamber crank and wheel trains. Kinematic synthesis.

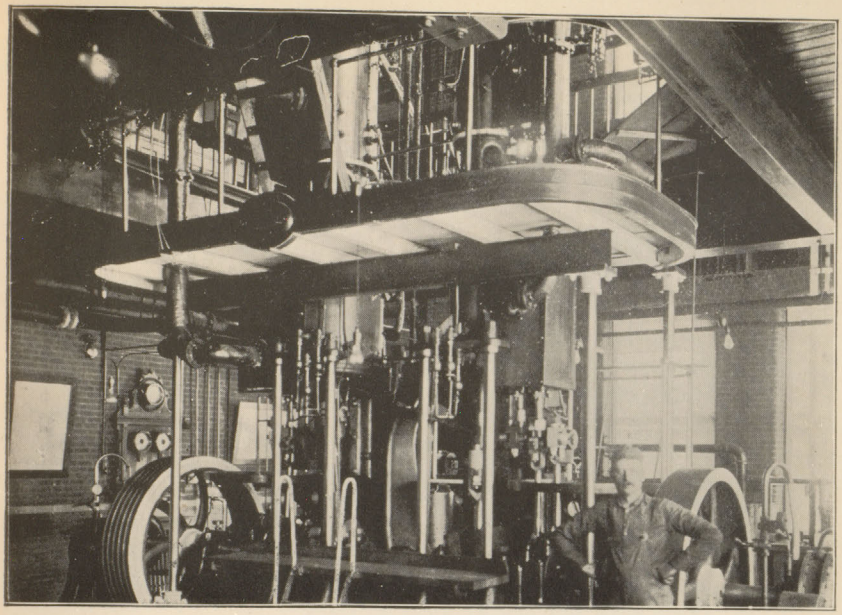
II. Dynamics of Machinery.

While motion without regard to force was considered in the kinematic course, the action of external forces so as to compel rest or prevent change of motion, or so as to produce or to change motion in the links of mechanism, is now considered in a series of lectures extending over two years.

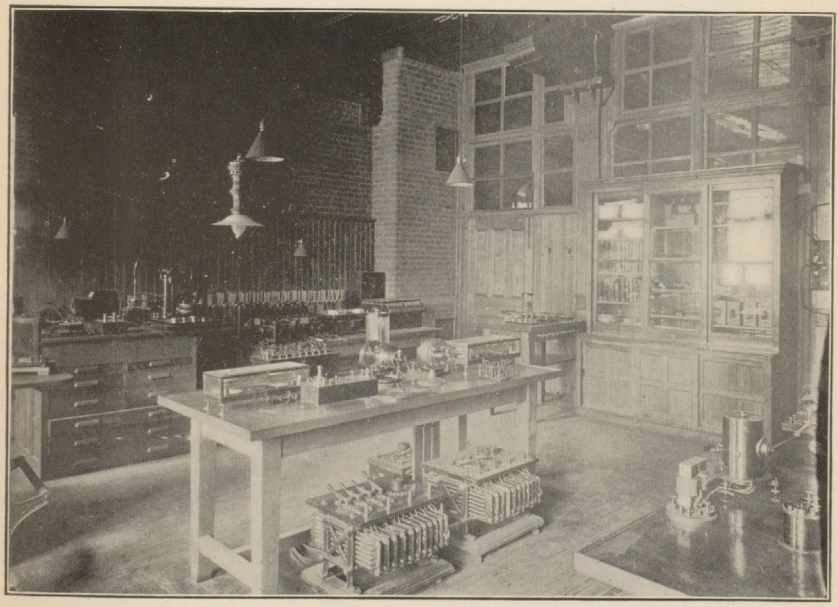
The Third Year course embraces the following:—

Friction. Laws based on recent experiments applied to journals and pivots. Railway brakes. Resistance to rolling. Friction in mechanisms treated graphically. Dynamics of belt and rope drives. Friction clutches. Elementary parts of dynamics of the steam engine. Curves of crank effort for single and multiple cranks. Fluctuation of energy and of speed. Fly-wheels. Indicators. Absorption and transmission dynamometers.

Fourth Year.—Balancing of double and single acting engines and of the locomotive. Rigid dynamics applied to the connecting rod, the oscillating engine, the governor, and gyrostatic action in



Experimental Engine in Thermodynamic Laboratory.



Electrical Engineering Laboratory.

machinery. The inter-relation between fly-wheel and governor. Dynamics of machine tools, of pumping and of forging machines. Graphic treatment of the dynamics of complicated machines. Knocking of steam engines.

III. Machine Design.

In the above courses the parts of the machines considered have been supposed perfectly rigid; their real state in this respect is considered in two courses of lectures extending over the Third and Fourth Years.

In the Third Year the principles of the strength of materials are applied to the elements of machines; *e.g.*:—bolts and nuts, keys and cotters, rivets and riveted joints; journals, pivots, axles, shafts and their couplings.

In the Fourth Year the first term is devoted to the more complicated parts of machines, such as bearings, pulleys, toothed wheels, pistons and their rods, connecting rods, cranks and their shafts, fly-wheels, valves, pipes and cylinders. The second term is taken up with the discussion of the theoretical principles involved in the special machine which is being designed in the drawing office. In successive years, a marine engine, a slotting machine, an overhead traveling crane, an experimental pump, an air pump and other machinery have been taken up.

IV. Mechanical Drawing.

This course extends over three years:—

Second Year.—Elementary principles of mechanical drawing. Simple machine details. Sketching of machinery. Dimensioning, tracing and conventional coloring.

Third Year.—Making of working drawings. Simple designing. Engine designing.

Fourth Year.—Practical machine design. The complete design of a machine, such as a steam engine, a pump, a crane, a turbine, a machine tool, or an air pump and condenser.

Transmission and Distribution of Power.

(See page 121.)

Graduate Course.

A graduate course in Mechanical Engineering has now been arranged for, and will consist of part or all of the following work:

Experimental researches on steam engines and boilers, hot air

and gas engines, compressed air plant for power transmission, refrigerating machines; on superheated steam, cylinder condensation, and feed heating; and on the value of fuels.

Experiments on the relative value and properties of lubricants, on transmission and absorption dynamometers, on the efficiency of transmission machinery, and of machine tools.

Researches on the tempering and welding of various materials; and on the properties of alloys.

8. MINING AND METALLURGICAL ENGINEERING AND ASSAYING.

Professor:—JOHN BONSALL PORTER, E.M., Ph.D. (Macdonald Professor of Mining and Metallurgy).

Lecturer:—JOHN W. BELL, M.Sc. (Macdonald Lecturer in Metallurgy and Assaying).

Demonstrator:—N. M. YUILE, B.Sc.

Fellow:—S. F. KIRKPATRICK, B.Sc. (Dawson Fellow in Metallurgy).

The work of the department does not begin until the third year of the regular course, and is chiefly carried on in the fourth year, as it is desirable that the students should have mastered the general principles underlying all engineering work before attacking the somewhat complex and highly specialized subjects of the professional courses.

I. Three introductory courses are given in the Third Year, as follows:—

MINING A.—Ore dressing. One lecture a week on the theory and practice of ore dressing and coal washing.—Treatment of ores underground and at the surface, hand picking, crushing and sizing, separating, vanning, jigging, etc.

Mill machinery and appliances; breakers, rolls, screens, jigs, vanners, tables, washers, buddles, magnetic separators, etc. (25 lectures.)

Laboratory, see Mining B.

MINING B.—Laboratory course for A. Simple examinations and tests of ores, sands and gravels, by means of pan, vanning shovel, hand jig, magnet, classifier, etc., giving experience in prospecting and testing without the aid of machinery. (40 hours.)

METALLURGY A.—One lecture a week in general elementary metallurgy—including introduction, fuels, furnaces and refractory materials, typical metallurgical operations and reactions, and the metallurgy of the less important elements—zinc, tin, aluminum, etc. (25 lectures.)

II. Several advanced courses and options are given in the Fourth Year as follows:—

MINING C.—One lecture a week on Principles of Mining.—Prospecting, sinking, drifting, developing, methods of mining, timbering, hauling, hoisting, drainage, lighting, ventilating, etc. Mine accidents and their prevention; general arrangement of plant, administration, stores and dwellings, etc. Mining law. (25 lectures—see also D.)

MINING D.—One lecture a week on Mining Machinery, and five hours a week in drawing room and laboratory on Mining and Metallurgical design. Mining and ore dressing machines and metallurgical appliances. (25 lectures and 110 hours in drawing room, etc.)

MINING E.—One day a week in the Ore Dressing Laboratory. Tests of ores, adjustment and use of machines. Horse-power and efficiency determination for different machines under varied conditions. Mill tests, etc., etc. (150 hours.)

METALLURGY B.—One hour for one term in Metallurgy of Gold and Silver, etc. Extraction of precious metals from free milling ores; stamp mill amalgamation, amalgamating pan and barrels, patio process, etc. Extraction from refractory ores; roasting chlorination, cyanide process, special methods, etc. Extraction from base metals, cupellation, parting, etc. Laboratory as in G. (25 hours lectures.)

METALLURGY C.—One hour a week on the Metallurgy of Iron and Steel, etc. Fuels, including calorimetry and furnace efficiencies. Iron and steel and the manufacture of structural material. With laboratory as in H. (25 hours lectures.)

METALLURGY D.—One hour a week on the Metallurgy of Copper, Lead, Silver, etc. Sampling and mixing of ores; calcination and roasting; mechanical calciners; smelting in reverberatory and shaft-furnaces; matte fusions; Bessemerizing, refining, etc. Wet methods; electro metallurgy. Laboratory as in G. (25 hours lectures.)

METALLURGY E.—One hour a week for one term on advanced Metallurgy, slag calculations, pyrometry, etc., etc., with laboratory as in G. (12 hours lectures.)

METALLURGY F.—Fire Assaying Laboratory. Assaying appliances. Furnaces, crucibles, scorifiers, cupels, etc. Pulp and button balances, and wet assay apparatus. Sampling and preparation of ores for assay; preparation and choice of fluxes and reagents, charges, methods, etc. Assays of gold and silver ores. Assays of lead ores. Parting of bullion, and assays of base bullion. Demonstrations and lectures, and 75 hours laboratory work.

METALLURGY G.—Metallurgical Laboratory. Use of furnaces—roasting, smelting, refining, etc. Pyrometry and tests of refractory materials. Flue gases and flue dust. 100 hours in laboratory, with demonstrations.

METALLURGY H.—A short course in Metallurgical laboratory on calorimetry and elementary pyrometry, etc., in connection with C. (20 hours, with additional time in Gas Analysis Laboratory.)

Special Courses are also offered in secord term of Fourth Year in Mineral and Metallurgical Chemistry, Electro Chemistry, Hydraulics and Advanced Thermodynamics. One of these several options must be taken. (12 to 25 lectures and laboratory work.)

Special courses in advanced work are also offered in both Mining and Metallurgy, and these courses, owing to the unequalled equipment of the new laboratories, as detailed below, can be made exceedingly valuable both theoretically and practically.

III. LABORATORIES.—The admirable laboratories of the University are of peculiar advantage to students in the Mining Course, and enable them not only to become acquainted with the theory of their subject, but to personally investigate its methods on a large scale.

During the first three years of the course, the students do systematic work in the several workshops and laboratories. During the last part of the Third and the chief part of the Fourth Year, they spend a large proportion of their time in the working laboratories for Ore Dressing and Metallurgy. (See § XIV.) In these latter, the general method is to assign to each student certain methods and pieces of apparatus which he must use and study out in detail, and upon which he must make a written report. In this work he is guided by the professor and demonstrators, and assisted by the other students, each of whom he must in turn assist in his special work. In this way every student must acquire detailed knowledge of certain typical operations and a fair general experience of all of the other important methods in use.

IV. ILLUSTRATIONS, MUSEUMS, SOCIETIES, ETC.—In addition to a large series of lantern slides, the department already owns a collection of over one thousand photographs, eight hundred of which are kept in series in duplicate, and loaned to students for the session; and arrangements are being made to furnish sets of these, at cost price, to such students as wish to retain them. This collection is rapidly being enlarged.

The Museum of the new building contains suites of ores, fuels and metallurgical materials, models of mines and furnaces, and specimens of finished products.

The McGill University Mining Society meets fortnightly to read and discuss papers by graduate and student members, and from time to time to hear lectures given by outsiders eminent in the profession.

V.—EXCURSIONS are made by the classes, from time to time, to such metallurgical works and mining establishments as are within reach.

VI. Summer School.—The summer vacation class in Mining instituted last year is now a fixed part of the course. All students of Mining in regular course are required to attend this class in the vacation between the Third and Fourth Years, and students passing from the Second to Third Year are advised to do so also.

The school was held in 1898 at the mines of the Dominion Coal Company in Cape Breton, and at the Richardson and Hurricane Gold Mines in Nova Scotia. In 1899 it will be in the anthracite mining region of Pennsylvania, and in the great iron and steel works near Philadelphia. In 1900 some other mineral locality will be visited.

The purpose of the school is to show the students by actual example the relations that obtain between theory and practice in engineering, and to acquaint them sufficiently with the methods and details of practical mining work to enable them to appreciate the technical details of the final year's teaching.

About six weeks are spent by the class in visiting mines and furnaces, and studying their operation. The professor of mining and his assistant go with the class, and give daily explanations and demonstrations. The students take notes and sketches, and at the end of the school each student writes up these notes in the form of a report, and these reports are accepted as the Summer Essays required by the Faculty.

Aid to Students.—The instruction given during this summer course is free to all mining students, and the only expense to them is the cost of board, lodging and railway fares, and every effort is made to keep these expenses as low as is practicable.

As some students may have difficulty in finding even this sum in addition to the cost of the regular course, a fund has been provided by Sir William Macdonald, and deserving students who require aid can have money advanced them by applying to the professor of mining.

9. Chemistry and Assaying.

Professors: B. J. Harrington, M.A., Ph.D. (Greenshields Professor of Chemistry and Mineralogy).
J. Wallace Walker, M.A., Ph.D. (Macdonald Professor of Chemistry).

Lecturers: Nevil Norton Evans, M.A.Sc.
——— ——— ———

Demonstrators: Alexander Brodie, M.A.Sc.
——— ——— ———

Students in all the departments of Applied Science are expected to take up the study of Chemistry in the Second Year, having previously acquired a knowledge of some branches of Physics in the First Year

of their course. They attend a course of lectures, supplemented by tutorial classes, on the laws of Chemical Combination, Chemical Formulae and Equations, the preparation and properties of the more important Elements and their Compounds, etc. They must also devote at least one afternoon a week throughout the session to practical work in the laboratory, where they learn the construction and use of ordinary apparatus, and perform a series of experiments designed to cultivate the powers of observation and deduction. Many of the experiments involve accurate weighing, and for this purpose the elementary laboratory is well supplied with balances. During the second term considerable attention is also devoted to the subject of Qualitative Analysis.

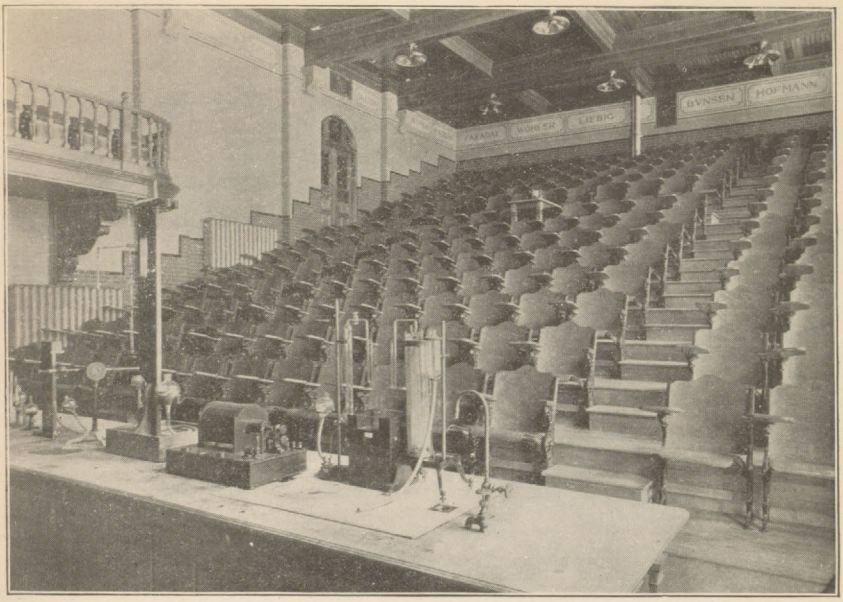
The lectures in the Third Year comprise:—

(a) A course dealing mainly with the methods and reactions employed in chemical analysis, being explanatory of the work done in the laboratory. One lecture a week during the session. (b) A course on the Metals and some of their more important compounds, consisting of two lectures a week during the first term. (c) An elementary course on Organic Chemistry, consisting of two lectures a week during the second term. (d) A course on the composition and analysis of Iron and Steel. One lecture a week during the second term.

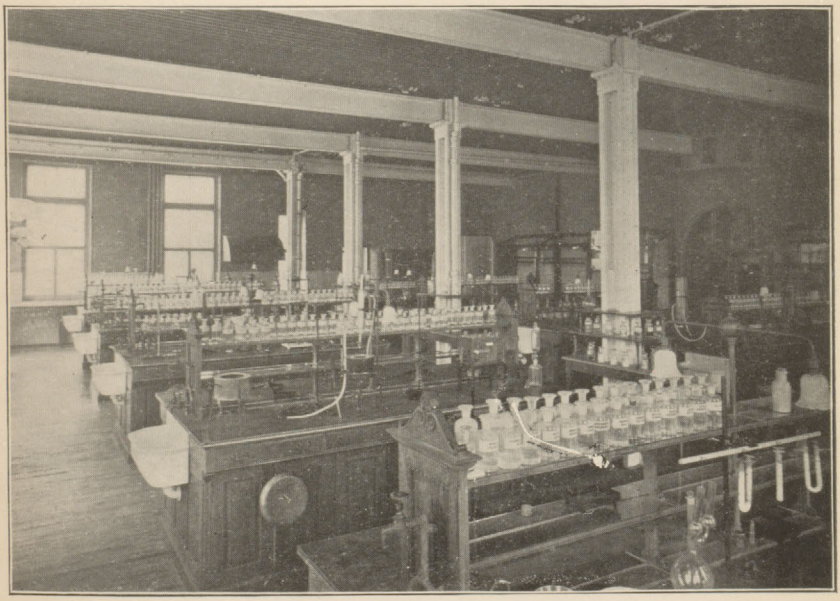
The laboratory work of the Third Year comprises an extensive course of Qualitative and Quantitative Analysis, including in the latter case gravimetric, volumetric and electrolytic methods. The analysis of Iron and Steel will be taken up during the second term.

Lectures in the Fourth Year include a systematic course of Organic Chemistry, and a course on Physical Chemistry, each consisting of two lectures a week. In the lectures on Organic Chemistry special attention is paid to the commoner substances which find an application in the Arts. The lectures on Physical Chemistry are divided into two parts. In the first term they include a study of such physical properties of gases, liquids and solids as are known to depend upon their chemical constitution, Thermo-chemistry, and the law of Mass Action. The second term is devoted to Electro-Chemistry, theoretical and applied. The lectures will be based upon the application of the gaseous laws to solutions. This will be followed by descriptions of the most recent applications of Electricity to the production of Metals and Chemicals.

Laboratory work in the Fourth Year will be arranged to suit the requirements of students. Those intending to prosecute organic work will take up a complete course of Organic Preparations and Analysis, but they must also spend some time on the essential physico-chemical methods; while students of Physical Chemistry must spend enough time in the Organic Laboratory to become familiar with the chief



Macdonald Chemistry Building
A Lecture Theatre.



Macdonald Chemistry Building
A Laboratory.

methods of organic work. Those intending to devote themselves to Mineral Chemistry will omit the Organic Chemistry, but must study the more important Physico-Chemical methods, and devote a large amount of time to advanced Mineral Aanalysis. All students in the Chemistry Course must take up Water and Gas Analysis during the first term. Mining students devote two afternoons a week to assaying in the wet way, and attend a short course in Gas Analysis. Fire Assaying is done in the Mining Department.

Laboratory courses will also be provided for students who wish to make a specialty of any particular branch of Industrial Chemistry, such as the Chemistry of Oils, Iron and Steel Analysis, Bleaching, Papermaking, and manufacture of Chemicals, etc.

10. THERMODYNAMICS.

Lecturer:—R. J. Durley, B.Sc., Ma.E., A.M.Inst. C.E.

Demonstrator:—H. M. Jaquays, M.A., M.Sc., A.M.Can. Soc. C.E.

Fundamental laws and equations of thermodynamics. Application to perfect gases and to steam saturated and superheated. Efficiency of perfect heat engines. Efficiency of actual air, gas, petroleum, and steam engines.

A study of the steam engine, including wire-drawing, cylinder condensation and jacketing, and the most efficient and most economical point of cut-off. Sizes and proportions of cylinders in single, double and triple expansion engines to develop a given power. Expected indicator diagrams. Sizes and proportions of the principal types of steam generators. Comparison of practical suitability of steam and caloric engines. Theory of engine and boiler testing.

Text-Book.—Ewing's Steam Engine.
Peabody's Tables of Properties of Steam.

11. GEOLOGY AND MINERALOGY.

Professors:—B. J. Harrington, M.A., Ph.D.
Frank D. Adams, M.A.Sc., Ph.D.

Demonstrator:—Osmond E. Leroy, B.A.

The courses are arranged as follows:—

Third Year.—

General Geology.—The lectures will embrace a general survey of the whole field of Geology, and will be introduced by a short course on Mineralogy. Especial attention will be devoted to Dy-

namical Geology and to Historical Geology, including a description of the fauna and flora of the earth during the successive periods of its past history, as well as to the economic aspects of the subject.

The lectures will be illustrated by the extensive collections in the Peter Redpath Museum, as well as by models, maps, sections and lantern views. There will be an excursion every Saturday until the snow falls, after which the excursion will be replaced by a demonstration in the Museum.

Text-Book.—DAWSON, Hand-book of Geology. *Books of Reference.*—DANA, Manual of Geology; SCOTT, An Introduction to Geology.

MINERALOGY.—Lectures and demonstrations illustrated by models and specimens in the Peter Redpath Museum. Among the subjects discussed are: Crystallography; physical properties of minerals dependent upon light, electricity, state of aggregation, etc.; chemical composition, calculation of mineral formulae, quantivalent ratios, etc.; principles of classification, description of species.

DETERMINATIVE MINERALOGY.—Laboratory practice in blowpipe analysis and its application to the determination of mineral species.

FOURTH YEAR:—

MINERALOGY (In continuation of the course in Third Year)—Description of species, particu'ar attention being paid to those which are important as rock constituents and to the economic minerals of Canada.

PETROGRAPHY.—The modern methods of study employed in Petrography are first described, and the classification and description of rocks is then taken up.

In addition to the lectures, one afternoon a week during the second term will be devoted to special microscopical work in the Petrographical Laboratory.

Text-Book.—HARKER, Petrology for Students.

PRACTICAL AND APPLIED GEOLOGY.—A description of the methods employed in observing and recording geological facts, concluding with a general treatment of the nature and mode of occurrence of Ore Deposits.

Text-Books.—GEIKIE, Outlines of Field Geology; KEMP, Ore Deposits of the United States; PHILLIPS and LOUIS, A Treatise on Ore Deposits.

CANADIAN GEOLOGY.—A general description of the Geology and Mineral Resources of the Dominion.

PETROGRAPHICAL LABORATORY.—See § XIV., 15.

GEOLOGICAL COLLOQUIM.—A discussion each week during second term of some Geological topic, references to the literature of which have been given by the Professor in the week preceding. The course is intended to give students some acquaintance with Geological literature, as well as a wider knowledge of the great principles which underlie the Science.

PALÆONTOLOGY.—(For students taking Honours.) Special studies of some of the more important groups of fossils.

Books of Reference.—NICHOLSON and LYDEKKER, Manual of Palaeontology; ZITTEL, Text-book of Palaeontology.

NOTE.—Students of the Mining and Chemistry courses take all the Mineralogy of the Third Year. Mining Students take all Courses of the Fourth Year. Chemistry Students take, in addition to the Geology of the Third Year, the Mineralogy of the Fourth Year.

The Petrographical Laboratory is open to Fourth Year Mining Students during the second term.

12. EXPERIMENTAL PHYSICS.

Professors:— JOHN COX, M.A. (Macdonald Professor of Physics).
E. RUTHERFORD, M.A., B.Sc. (Macdonald Professor of Physics).

Demonstrators:—ROBERT O. KING, B.A.Sc.
J. W. FRASER, B.Sc.
R. M. MCCLUNG, B.A.

The instruction includes a fully illustrated course of Experimental Lectures on the general Principles of Physics (embracing, in the Second Year—*The Laws of Energy—Heat, Light and Sound*; in the Third Year—*Electricity and Magnetism*), accompanied by courses of practical work in the Laboratory, in which the Students will perform for themselves experiments, chiefly quantitative, illustrating the subjects treated in the lectures. Opportunity will be given to acquire experience with all the principal instruments used in exact physical and practical measurements.

LABORATORY COURSE.—Three hours per week spent in practical measurements in the Macdonald Physical Laboratory in conjunction with the lecture courses.

Sound.—Velocity of Sound; determination of rates of vibration of tuning forks; Resonance; laws of vibration of strings.

Light.—Photometry; Laws of Reflection and Refraction; focal lengths and magnifying powers of mirrors, lenses, telescopes and

microscopes; the sextant; spectroscope, spectrometer, diffraction grating, optical bench, polariscopes.

Heat.—Construction and calibration of thermometers; melting and boiling points; air thermometer; expansion of solids, liquids and gases; calorimetry; pyrometry.

Magnetism and Electricity.—Measurements of pole strength and moment of a magnet; the magnetic field; methods of deflection and oscillation; comparison of moments and determination of the elements of the earth's magnetism; frictional electricity.

Current Electricity.—A complete course of measurements of current strength, resistance and electromotive force; calibration of galvanometers; the electrometer; comparison of condensers; electromagnetic induction.

SECOND YEAR.—Electrical Engineering Students are given an extra laboratory period of 3 hours per week, which allows of a more extended and complete course of experimental work.

THIRD YEAR.—Students of Electrical Engineering will continue their work in the Phpsical Laboratory in the Thir dYear. The following is a brief outline of the course:—

Magnetic elements and measurements. Use of Variometers. Testing magnetic qualities of iron.

Theory and practice of absolute electrical measurements.

Comparison and use of electrical standards of resistance, E.M.F., self-induction and capacity.

Principles of construction of electrical instruments.

Testing and calibration of ammeters, voltmeters and wattmeters.

Insulation and capacity tests. Electrometers and Ballistic methods.

Construction and treatment of storage cells. Testing for capacity and rate of discharge.

Electric light photometry.

An additional course on telegraph and telephone work is under consideration.

The following are some of the sections in which special provisions have been made for advanced physical work:—

Heat.—Thermometry. Comparison and verification of delicate thermometers. Air thermometry. Measurement of high temperatures. Electrical resistance thermometers and pyrometers. Thermoelectric pyrometers.

Calorimetry. Mechanical Equivalent of Heat. Variation of specific heat with temperature. Latent heat of fusion and vaporisation. Heat of solution and combustion. Electrical methods.

Radiation and conduction of heat with special methods and apparatus. Dynamical theory of gases.

Viscosity. Surface Tension. Variation of properties with temperature.

Light.—Photometric standards. Spectro-photometry. Theory of colour vision. Spectroscopy and spectrum photography. Compound prism spectrometers. Six inch and 2½ inch Rowland Gratings. Study of spectra of gases. Fluorescence and anomalous dispersion. Polarimetry. Landolt and other polarimeters. Form of wave surface.

Sound.—Velocity in gases and various media. Absolute determinations of period. Harmonic analysis of sounds. Effects of resonance and interference.

Electricity and Magnetism.—Magnetic properties. Influence of stress and torsion. Influence of temperature. Effects of hysteresis. Magneto-optics. Other effects of Magnetisation. Diamagnetism.

Electrical standards and absolute measurements. Calibration of electrical instruments.

Insulation and capacity testing. Electrometer and Ballistic methods. Temperature variation of resistance and E.M.F. Thermo-electric effects. Electrolysis. Chemistry of primary and secondary batteries. Resistance of Electrolytes, Polarisation.

Electric discharge in gases and high vacua. Dielectric strength. Behaviour of insulators under electric stress. Specific inductive capacity. Electro-magnetic optics. Alternating currents of high frequency and voltage. Electrical waves and oscillations. Discharge of electrification by Röntgen rays, ultra-violet uranium and thorium radiations.

N.B.—Students taking a Graduate Course will receive guidance in any advanced Mathematics required in connection with their work.

13. MATHEMATICS AND MATHEMATICAL PHYSICS.

Professor:—G. H. Chandler, M.A.

Lecturer:—R. S. Lea, Ma.E.

The work in this department is conducted from the outset with special reference to the needs of Students of Applied Science. Much time is given to practice in the use of Mathematical Tables, particular attention being paid to the solution of triangles, the tracing of curves, graphical representation of functions, reduction of observations, etc. Areas, volumes, masses, centres of gravity, moments of inertia, etc., are determined both by calculation and by observation or experiment, and each method is made to supplement or illustrate the other. In this connection, use will be made, in actual laboratory practice, of a

large amount of apparatus, such as balances, Atwood's machines, inclined planes, chronographs, rotation apparatus of various kinds, etc. The different methods of approximation and the reduction of results of experiments and observations will also receive due attention.

The lectures will embrace the following subjects:—

First Year.—Euclid, to the end of Book VI., with exercises on Loci, Transversals, etc., Algebra, including the Binomial Theorem. Elements of Solid Geometry and of Geometrical Conic Sections. Plane and Spherical Trigonometry. Elementary Kinematics and Dynamics.

Second Year.—Analytic Geometry. Differential and Integral Calculus. Dynamics of Solids and Fluids.

Third Year.—Continuation of Analytic Geometry, Calculus and Dynamics.

Classes may also be held for advanced (optional) work in these or other subjects.

N.B.—Students taking Graduate Courses will receive guidance in any advanced Mathematics required in connection with their work.

Text-Books (Partial list).—Todhunter's or Mackay's Euclid, Hall & Knight's Elementary Algebra, Wilson's Solid Geometry and Conic Sections, Wentworth's Analytic Geometry, Chandler's Calculus. Blakie's Dynamics, Wright's Mechanics, Bottomley's Mathematical Tables, Chambers' Mathematical Tables.

14. ENGLISH LANGUAGE AND LITERATURE.

Professor:—C. E. Moyse, B.A. (Molson Professor of English Language and Literature).

Lecturer:—.. .. ..

A special course in English Composition is prescribed for all students in the First Year. The general aim of this Course is to train the students to express themselves in good English, and to cultivate in them readiness and accuracy of perception in matters of thought and style. Essays on current events and on popular and literary subjects, based on selections from the writings of well-known authors, are written weekly.

Vacation Work.—During the vacation, students entering the Second Year are expected to read certain selected standard works in literature and fiction, and are required to pass an examination based upon a knowledge of the textual matter of such works. The marks obtained in this examination will be reckoned in determining



Macdonald Chemistry Building.
A Research Laboratory.



Macdonald Mining Building.
The Assay Room.

the relative standing at the sessional examinations at the end of the Second Year.

The works selected for the vacation of 1899 are:—

Shakspere's Tempest, ed. Deighton (Macmillan);
Scott's Waverley;
Goldsmith's Vicar of Wakefield;
Selections from the Spectator, edit. by Deighton (Macmillan).

15. METEOROLOGY.

Instruction in Meteorological Observations will be given in the Observatory at hours to suit the convenience of the Senior Students. Certificates will be granted to those Students who pass a satisfactory examination on the construction and use of Meteorological Instruments and on the general facts of Meteorology.

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§ XIV. LABORATORIES.

In the Laboratories the Student will be instructed in the art of conducting experiments, a sound knowledge of which is daily becoming of increasing importance in professional work.

1. ASSAYING LABORATORY. See MINING and METALLURGICAL LABORATORIES.

2. ASTRONOMICAL OBSERVATORY. See GEODETIC LABORATORY.

3. CEMENT LABORATORY. See TESTING LABORATORIES.

4. CHEMICAL LABORATORIES.—In September last the Chemical work was transferred to the new Macdonald Chemistry and Mining Building, where admirable facilities are afforded for study and research in the various departments of Chemistry. The building is spacious, well lighted, and ventilated by means of electric fans, one placed in the basement and two in the attic. The electric current for these, as well as for lighting purposes, etc., is obtained from the Engineering Building. The rooms throughout are heated by hot water, and the fresh air introduced into the building is heated by passing it over steam coils. The principal laboratories and preparation rooms are abundantly supplied with distilled water brought by tin pipes from a tank in the attic.

The main lecture theatre, extending through two storeys, is entered from the ground floor, and seats nearly 250 students. The acoustic properties of the room have proved excellent. The lecture-table is supplied with coal-gas, oxygen and hydrogen, electricity, water, vacuum, down-draught, etc., and can be well seen from all parts of the room.

Besides the main lecture theatre there are three smaller class-rooms, accommodating from 40 to 60 students each.

The three principal laboratories have each a floor-space of about 2,400 square feet, and together have accommodation for nearly two hundred students working at a time. They are lighted on three sides, and have ample hood space. One is intended for beginners, and the others for more advanced work, more particularly in qualitative and quantitative analysis. In connection with each of the main laboratories is a balance-room, equipped with balances by several of the best makers.

Physical Chemistry is provided for in a special laboratory, nearly 30 by 40 feet, lighted from the north, and supplied with electricity, steam, vacuum pumps, etc. The equipment of this department consists of the apparatus necessary for the determination of the specific gravities of solutions, of the depression of freezing point, and the rise of boiling point, of the densities of gases and vapours. There are constant-temperature baths for accurate measurement of solubilities, Konlrausch's apparatus for determining the electrical conductivity of solutions, and the apparatus necessary for measuring the electromotive forces generated between metals and their solutions, and in voltaic cells generally. There are also calorimeters for measuring the heat effects produced in chemical reactions. There is on the same floor an optical room furnished with refractometers for measuring the refractive indices of solutions, goniometers, polariscopes and spectroscopes. Other forms of apparatus will be added as required for research work.

Immediately adjoining the laboratory of Physical Chemistry is the Photographic department, supplied with two dark rooms, arranged on the maze system, and supplied with the necessary appliances for all ordinary photographic work, including an enlarging camera. Apparatus for micro-photography will shortly be added to the equipment.

The laboratory for gas analysis has a northern exposure, and is fitted with a large tank to contain water at the temperature of the room,

for use in obtaining a constant temperature in the measurement of gases. The tables are arranged for work with mercury, and the laboratory is supplied with the apparatus of Hempel, Dittmar, Orsat, Elliot, and others. It contains also Fleuss, Boltwood and Töpler pumps for producing high vacua.

The laboratory for electrolytic analysis is supplied with accumulators, thermopile, platinum electrodes, rheostats, ammeters, voltmeters, etc.

Another room is shortly to be equipped with electric furnaces and other appliances for electro-chemical work.

The organic department comprises a laboratory for preparations and research, a combustion room for analysis, a dark room for polariscope and saccharimeter work, and a lecture room. The laboratory is fitted with all the necessary apparatus for organic research—special hoods for work with poisonous gases, regulating ovens for digesting and drying at various temperatures, filter presses for the extraction of raw materials, and various forms of apparatus for distillation in vacuo. The dark room is equipped with polariscopes and saccharimeters for sugar work. And there is a large supply of the necessary organic chemicals, which are supplied free of charge to students engaged in routine or research work in this department.

The laboratory for determinative mineralogy has places for 28 students, and is supplied with abundant material for practical work. It adjoins the lecture-room, in which the lectures in advanced mineralogy are delivered. The mineralogical department is also provided with suitable machinery, run by electricity, for use in the cutting and polishing of minerals and rocks.

The Library contains a valuable collection of the most recent English, French and German books, and sets of various journals and transactions, including the Berichte der Deutschen Chemischen Gesellschaft, Journal für praktische Chemie, Chemisches Central-blatt, Fresenius Zeitschrift für Analytische Chemie, Annales de Chemie et de Physique, Journal of the Chemical Society, Chemical News, Mineralogical Magazine, Mineralogische und Petrographische Mittheilnugen, etc. The library is open to students under such restrictions as are necessary to prevent damage or loss of books.

The rooms for allied purposes have, as far as possible, been grouped together on the same floor, and there is a hydraulic lift running from the basement to the attic. The offices and principal laboratories and supply rooms are also connected by a system of telephones. The building is practically fire-proof.

5. Dynamics, Laboratory of. See Mathematics and Dynamics, Laboratory of.

6. Electrical Laboratories.—These have been completely remodelled during the past year, and now contain all principal types of commutating, synchronous and induction machinery, together with ample facilities for investigating their action. The several laboratories are the Standardizing Laboratory, the Dynamo Laboratory and laboratories for special investigation.

(*a*) The Standardizing Laboratory is equipped with four Kelvin balances for current measurement, best range, .025 to 600 amperes, a Weston laboratory standard ammeter, range with shunts 0—600 amperes, a Weston laboratory standard voltmeter, range with multipliers 0—3000 volts, special Weston alternating current voltmeters, special potentiometer with standard cells, means for measuring high and low resistances, dielectric strength of insulating materials, etc.

Direct current for the laboratories is furnished either from the generating unit in the service plant, a special motor-dynamo whose voltage can be varied from 0—10volts, current capacity 300 amperes, a 75 k.w. .hour storage battery arranged in sections, and from any machine in the cynamo laboratory. Alternating current of several wave shapes and of frequencies up to 150 periods per second, and of voltages up to 200,000 is available. A special transformer having a current capacity of 800 amperes is used for alternating current ammeter calibration.

(*b*) The Dynamo Laboratory. This laboratory consists of two sections; a section devoted to direct current work, and a section devoted to alternating current work. The previous method of driving from an overhead line shaft and clutch pulleys has been abandoned, and individual motors supplied for each dynamo. Each motor is provided with suitable series turns and variable shunt, the whole being connected to act with or against the shunt turns, as compounding or a differential effect is desired. The speed of the motors can be varied about 50 per cent. by field rheostat. This

gives perfect control of dynamo speed. Current for operating is obtained from six independent sources of supply; one 75 k. w. direct connected unit in services plant, three sets of 25 k. w. hour chloride accumulators, and two city supply circuits. All dynamos and motors are mounted on strong testing benches fifteen inches high, with slotted floor so that any machine can be placed anywhere on the bench and secured in place. Two small travelling cranes over the benches allow machines to be easily shifted. All wiring is done in conduits under the floor, and large sectional switchboards are provided for current distribution about the laboratories. Special testing tables permanently wired up and fitted with circuit breakers, switches, etc., facilitate the work. Twenty-five commutating machines, generators, motors, boosters, motor-generators, dynamotors, converters, closed and open coil arc machines, varying in capacity from a fraction of a kilowatt to 75 kilowatts of many different types and makes are provided for direct current testing. Twelve alternating current machines, including generators, synchronous motors, compensators, and synchronous converters, together with a large amount of stationary and rotary induction apparatus, are provided for alternating current work. Several of the alternating current dynamos are of the inductor type, and several different shaped inductors are provided with each machine to give different wave forms. Also a specially arranged induction motor serves as a frequency changer.

The laboratory is also provided with between sixty and seventy voltmeters, ammeters and wattmeters of standard make and of different ranges, condensers, rheostats, standard resistances, etc.

(*c*) Special Laboratories. A laboratory for special investigations adjoins the standardizing laboratory, and a large battery room, and room for photometric work, are also provided.

7. Mathematics and Dynamics, Laboratory of.—The equipment of this Laboratory includes instruments for the measurement of distance (scales, micrometers, cathetometer), of area (planimeters), of volume (flasks, graduated vessels,

etc.), of time (clocks, chronographs), of mass (beam and spring balances) ; it is also provided with a mechanical integrator, specific gravity balances, Atwood and Morin machines for experiments on the Laws of Motion, inclined planes, a variety of rotation apparatus (gyroscope, Maxwell's dynamical top, torsion balance, pendulums, etc.), air-pumps, thermometers, barometers, etc.

The Mathematical Laboratory is used chiefly in connection with the course in Dynamics. Lectures are given on the fundamental and derived units of the Science, as well as on the Laws of Motion, and deductions from the same. When the students have in this way been made acquainted with some of the ideas of the subject, they are admitted to the laboratory, where experiments of a progressive character are assigned to them. These experiments are in all cases quantitative, and embrace the measurement of mass by means of accurate physical balances, of intervals of time by clock and chronograph, and of distance by means of scales, screw micrometers, etc. They then proceed to the measurements of areas, volumes, velocities, accelerations, forces, specific gravities, friction, and also to pendulum experiments, etc. The equipment of the laboratory for this work is very complete, embracing as it does the ordinary instruments for the purpose to be found in most physical laboratories, together with a variety of apparatus specially constructed for this laboratory. Particular attention is given in the lectures to the principles of observing in general, the sources of error, etc.; the whole course having reference to the subsequent work of the student in the Physical and Engineering Laboratories.

8. Mechanical Laboratory.—In this Laboratory experiments are carried out on the efficiency of belts, shafting, and machine tools. Governors are tested with the chronograph, and lubricants by journal friction-testing machine. Sliding and rolling friction and the stiffness of ropes also form subjects for experiment.

Much valuable apparatus has been added to this laboratory since the opening of the Buildings, all of which has been made in the mechanical workshops, and mainly by students. The Thurston oil tester and the Bunte's viscosimeter, which formed the original equipment, have been supplemented by a hydraulic dynamometer for testing the efficiency of machines, a rotary transmission dynamometer on a new principle, with recording attachment, a pneumatic gauge for measuring delicate pressures down to the 3,000th of a lb. per

square inch, two other draft gauges, a belt transmission dynamometer, a belt-testing, and other apparatus.

With these instruments, and with the machines and other appliances in the workshops, experiments are carried on during the winter session, and students sometimes carry out researches during the summer months.

Many visits have also been paid to engineering works and manufactories of importance.

9. METALLURGICAL LABORATORY. See MINING and METALLURGICAL LABORATORIES.

10. MILLING ROOM. See MINING and METALLURGICAL LABORATORIES.

11. GEODETIC LABORATORY.—The equipment of this laboratory consists of:—

(1) Linear instruments.

(*a*) A Rogers comparator and standard bar for investigating standards of length.

(*b*) A fifty-foot standard and comparator for standardizing steel bands, chains, tapes, rods, etc.

(*c*) A Whitworth end-measuring machine and set of standards.

(*d*) A Munro-Rogers linear dividing engine.

(2) Circular instruments.

(*a*) A Rogers' circular comparator and dividing engine.

(*b*) Two level triers.

(3) Time.

(*a*) An astronomical clock and clock circuit in connection with the observatory clocks.

(*b*) Chronometers running on mean and sidereal time.

(*c*) Chronograph.

(4) Gravity.—A portable Bessel's reversible pendulum apparatus, with special pendulum clock and telescopic apparatus for observing coincidences of beats.

(5) A water gauge apparatus for testing aneroid barometers.

(6) Magnetic instruments:—

(*a*) A Kew dip circle.

(*b*) A Kew filar magnetometer.

The laboratory is constructed with double walls and enclosed air spaces, and has a special heating apparatus, so that

the temperature within may be brought to, and held at, any desired degree.

The ordinary course of instruction in this laboratory is described in § XIII., Art. 3.

Astronomical Observatory.—The observatory equipment for the purpose of instruction in practical astronomy consists of :—

1. A Bamberg prismatic transit with zenith attachment.
2. Two astronomical transits for meridian observations. Collimating telescopes.
2. A Troughton & Simms' zenith telescope.
4. An astronomical transit in the prime vertical.
5. Sidereal and mean time clocks and chronometers.
6. Chronograph and electrical circuits by which observations and clock comparisons within or without the observatory may be made.

12. Hydraulic Laboratory.—Here the student will study practically the flow of water through orifices of various forms and sizes, through submerged openings, over weirs, through pipes, mouth-pieces, etc.

The equipment of this laboratory includes:—

(*a*) A large Experimental Tank, 30 ft. in height and 25 sq. ft. in sectional area. With this tank experiments are conducted on the flow of water through orifices either free or submerged. By a simple arrangement the orifices can be rapidly interchanged without lowering the head, and with the loss of only about one pint of water. The indicating and measuring arrangements connected with the tank are exceedingly delicate and accurate, all times being automatically recorded by an electric chronograph ; and valuable results have already been obtained. By means of a special connection with the city water-supply, the available head of water may be increased up to 280 ft.

(*b*) An Impact Machine, which renders it possible to measure the force with which water flowing through an orifice, nozzle, or pipe, strikes any given surface, and also the impulsive effect of the water entering the buckets of hydraulic motors.

(*c*) A Rife's Hydraulic Ram.

(*d*) A Jet Measurer specially designed for investigating the dimensions of the jet produced in the phenomena known as "the inversion of the vein." With this apparatus it is possible to determine, within .001 inch, the dimensions of a jet in any plane and at any point of the path.

(*e*) Numerous orifices, nozzles, and mouth-pieces.

(*f*) A specially designed stand-pipe, with all the necessary connections for pipes of various sizes for investigations on frictional resistance. The pressures are measured by recording gauges, etc.

(*g*) A flume about 35 feet in length, by 5 ft. in width by 3 ft. 6 ins. in depth.

(*h*) Weirs up to 5 ft. in width, and with a depth of water over the sill varying from nil to 8 inches. A weir-depthing machine, with three adjustable heads, gives the surface depth of the stream at any three points in a transverse section. The velocity of the stream is also determined by means of a double Pitôt tube.

(*i*) Numerous hydraulic pressure-gauges.

(*j*) A mercury column 60 feet in height.

(*k*) Gauge-testing apparatus.

(*l*) Various rotary, and piston meters, and a Venturi meter.

(*m*) Apparatus for illustrating vortex motion.

(*n*) Apparatus for illustrating vortex ring motion, and for determining the critical velocity of water flowing through pipes.

(*o*) Five specially built gauging tanks with suitable indicators, each having a capacity of 800 cubic feet. Also other portable tanks.

(*p*) Transmission and absorption dynamometers.

(*q*) An experimental centrifugal pump, which can be tested with varying heights of suction and discharge.

(*r*) An inward-flow turbine, a new American turbine, a Pelton, and other motors and turbines.

(*s*) Standard gallon and litre measures with glass strikes. This Laboratory is also provided with a set of pumps, speci-

ally designed for experimental work and research. They are adapted to work under all pressures up to 120 lbs. per sq. in., and at all speeds up to the highest found practicable. The set is composed of three vertical single acting plunger pumps of 7 in. diam., 18 in. stroke, driven by one shaft. They have two interchangeable valve chests, and it is arranged that both the valves and their seats may be removed and replaced by others. The pumps are also provided with a double set of continuous triple recording indicators designed in the laboratory and having electrical connections. With these, an accurate record of the history of the suction and discharge valves may be obtained at any given time, all fluctuations of time, speed, pressure, etc., being automatically recorded.

In the Hydraulic Laboratory, investigations are being carried out on the flow of water through orifices of different sizes and forms, on the effect of viscosity upon the flow, and for the purposes of determining the co-efficients of discharge through conical nozzles.

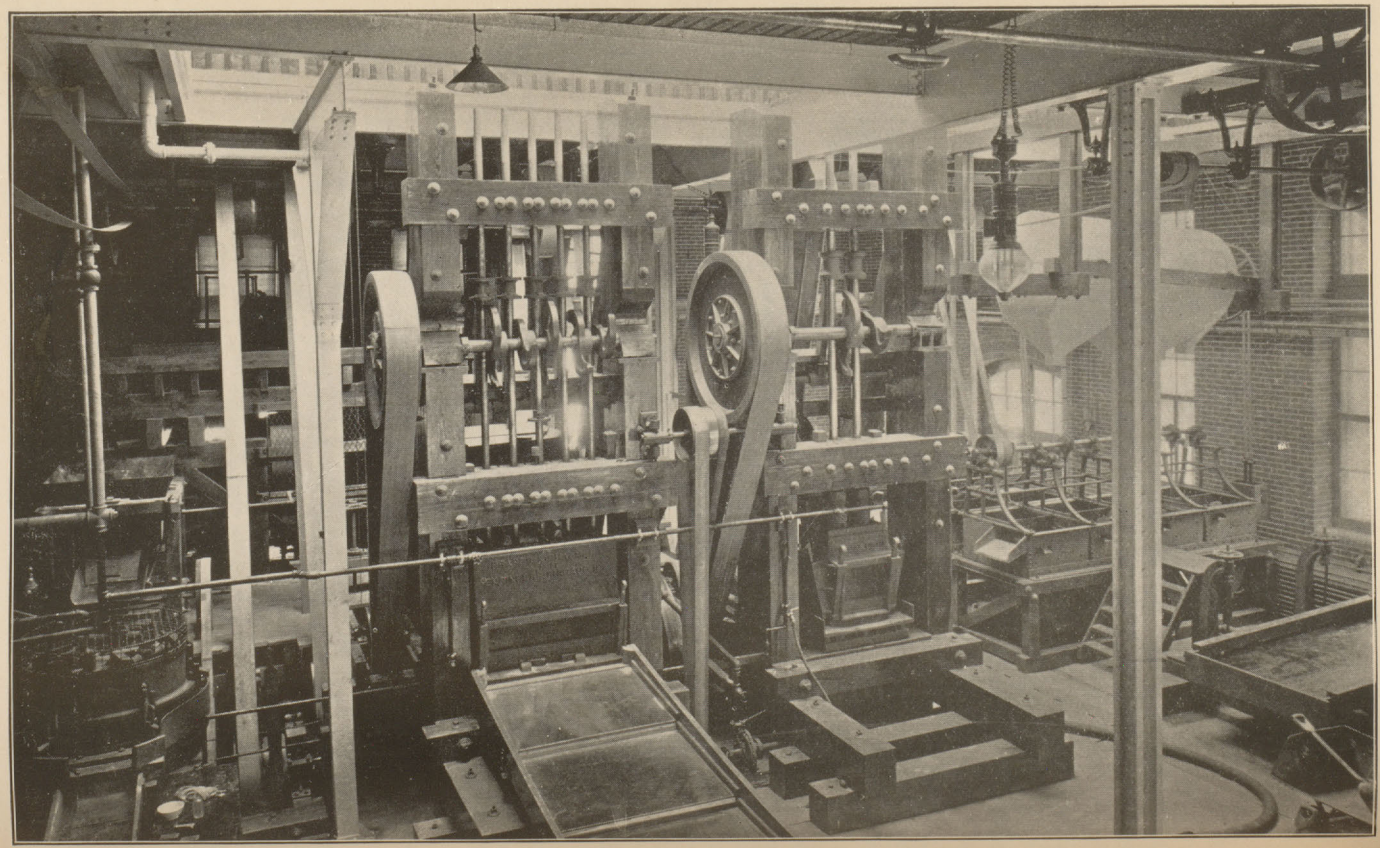
Similar experiments and also experiments on the flow of water over weirs have been directly conducted by the students, who are thus able to obtain experience in the scientific treatment of hydraulic problems, which will certainly be of the utmost value to them in their future career.

13. Mining and Metallurgical Laboratories.—The Macdonald Chemistry and Mining Building is now completed, and the Mining and Metallurgical Laboratories, situated in the lower part of the structure, are fully equipped.

These laboratories, with the lecture rooms and library, the professor's office, and rooms for apparatus, supplies and fuel, are very conveniently arranged individually and with regard to one another, and occupy the lower part of the main building and the whole of both wings. The total floor space covered is approximately 15,000 square feet, divided as follows:—

Mining and Ore-Dressing Laboratory, or Milling Room, 3,500 square feet; Metallurgical Laboratory, or Furnace Room, 3,000 square feet; Assay Laboratory, 2,500 square feet; Wet Assaying Rooms, 500 square feet; Technical Lecture Room, 750 square feet; Library and Drawing Room, 750 square feet; Offices, Stores and so forth, 4,000 square feet.

The two rooms first mentioned are of great size, and are the chief laboratories of the department. In these it is possible to take any



Milling Room in the Mining Department.

ores of gold, silver, copper or lead in the condition in which they come from the mines, and to treat them from beginning to end precisely as they are treated in the ore-dressing works and smelting plants of the mineral regions. They may therefore be considered as constituting a small commercial plant for the actual production of metals. They differ from commercial plants, however, in that an ordinary ore-dressing establishment or smelter is designed to treat the ores of only one district and sometimes of only one part of a district. The University Laboratories must of course be adapted to all ores now found or likely to be found in the Dominion, and therefore contain a greater number of pieces of apparatus than are to be found in any one commercial establishment, although probably no case will come up when all of these machines will be used for any one test.

The Milling-Room is equipped with a complete working plant, capable of treating, if necessary, 10 to 20 tons of ore per day, the chief pieces of apparatus being:—Rock Crushers of three kinds ("Blake," "Dodge" and "Comet"), to break the large pieces of ore to small size. Stamp mills of 500 and 950 lbs., respectively, for the fine crushing and amalgamating of gold ores. Huntington mill, for crushing and amalgamating. Rolls, both coarse and fine, to reduce ores to powder when necessary. Trommels and sieves for sizing the crushed ores. Adjustable Hartz, Collom and slide jigs, with 2 and 4 compartments, for concentrating minerals by gravity. Revolving, bumping, and belt tables, Frue vanner, Wilfley table, etc., for separating valuable minerals contained in fine sands and crushed rock. Plates, pans and barrels for amalgamating gold and silver ores. Spitzkasten, spitzlütten, magnetic separators, coal washers, buddles and various other special pieces of ore-dressing apparatus.

The machinery above mentioned is not in miniature; it is of full size, such as the graduates will afterwards find in use in working establishments, and is provided with hydraulic lift, belt and bucket elevators, hand trucks, etc., etc. It is, however, so arranged that each piece can be worked by itself, and taken apart and cleaned up; and such of the larger pieces as cannot be used for small quantities of material are duplicated in miniature by working models for handling small lots of material. The laboratory, while thus adapted to illustrate continuous work on a comparatively large scale, is even more perfectly designed for experimental work on as small a scale as is compatible with accuracy of result. The motive power used in the laboratories is electricity, generated in the University power and light station, and utilized through a number of electric motors conveniently placed near the machines to be operated. The department is equipped with the most approved apparatus for electrical measurements, and is thus able to make constant and accurate determinations of the

amount of power used by each machine, and for any especial condition of use.

THE METALLURGICAL LABORATORY is fitted with a water-jacket blast-furnace, 24 ins. inside diameter, with the necessary blast apparatus for smelting lead and copper; also with a hand reverberatory furnace, a Bruckner-cylinder furnace, an English cupellation-furnace, and several crucible furnaces.

It has also a lead-lined chlorination barrel for high pressures, with filter press, air pump, etc., and several small vats, barrels, etc., for the chlorination and leaching of silver and other ores, also both large and small cyanide extraction plants for gold ores, these being the new methods which are revolutionizing the gold metallurgy of the world and producing such extraordinary yields in the mines of South Africa, the United States and Australia.

In addition to the above named apparatus, the department is being fitted with an electric furnace; and, with a full equipment of electric pyrometers of both the La Chatellier and Callendar types. It also has a Mahler calorimeter and several other less elaborate calorimetric instruments.

The two main laboratories are very large and well lighted, and are each 20 ft. high in the clear. Close to them are the rooms for storage of ores, fuel, etc., etc., from which clear level passages lead to the elevators and connect with the crushers and furnaces. There are also several overhead hoists and travellers. Material can therefore be moved from one point to another with the greatest ease, and pieces of apparatus can be readily taken apart, and, if necessary, moved by the same means.

It is not the purpose of the University to use these laboratories for commercial work, although they are quite large enough for such service. They are to be used solely for educational work and for investigation; and, owing to their thoroughly practical nature, instruction given in them will be of immensely geater value to the students than could be the case if the work were done only in miniature. At the same time, the investigations made by means of such apparatus will be of great use to the mining and metallurgical community, as they can be carried out in all respects under working conditions, and will, therefore, be free from the disturbing causes likely to interfere with attempts to reproduce commercial processes on a small scale.

THE ASSAYING LABORATORY is equipped with a large soft coal assay furnace, and with a complete set of small muffle and crucible furnaces, some of each being arranged for gas and gasoline, and others for coke and charcoal, as in some parts of the Dominion one of these fuels must

be used, while in other parts another is found more desirable. Connected with this laboratory is a room with pump, bullion and assay-balances, and others equipped for wet analysis of ores, and the other chemical work required in connection with the main investigations.

The courses of instruction in these laboratories are described in § XIII, 8.

14. Modelling.—A Laboratory for modelling in clay is arranged as part of the work in the Architectural Department. Third and Fourth Year Architectural Students follow a regular course in Modelling under the instruction of the Assistant Professor of Freehand Drawing.

15. Petrographical Laboratory.—The Petrographical Laboratory, containing the chief rock collections of the University, is situated in the east wing of the Arts building, but is about to be transferred to the new Chemistry and Mining building. It is arranged for the use of Students in the Mining Course as well as for those desiring to take advanced work, and is provided with a number of petrographical microscopes by Seibert, Crouch, and Fuess, as well as with models, sets of thin sections, electro-magnets, heavy solutions, etc., for petrographical work.

A collection of typical rocks has been especially prepared for the use of students, and a complete equipment of diamond and emery saws, grinding laps, etc., running by electric power, has been installed, which gives excellent facilities for the preparation of thin sections for microscopic use.

For advanced work and petrographical investigation Dr. Adams' extensive private collection of rocks and thin sections is available for purposes of study and comparison.

16. Physical Laboratory.—The Macdonald Physical Laboratory contains five storeys, each of 8,000 square feet area. Besides a lecture theatre and its apparatus rooms, the building includes an elementary laboratory nearly 60 feet square ; large special laboratories arranged for higher work by advanced students in heat and electricity, a range of rooms for optical work and photography; separate rooms for private thesis work by students; and two large laboratories arranged for research, provided with solid piers and the usual standard

instruments. There are also a lecture room, with apparatus room attached, for mathematical physics; a special physical library, and convenient workshops. The equipment is on a corresponding scale, and comprises: (1) apparatus for illustrating lectures; (2) simple forms of the principal instruments for use by the students in practical work; (3) the most recent types of all the important instruments for exact measurement, to be used in connection with special work and research.

The basement contains the cellars, furnaces, and janitor's department at the west end of the building. The machine room—containing a small gas engine and dynamo, which are fitted for testing, but can also be used for light and power, a motor-alternator and a motor-dynamo—is situated at the extreme western corner of the basement so as to be as far removed as possible from the delicate magnetic and electrical instruments. Here is also the switch-board for controlling the various circuits for supplying direct or alternating current to different parts of the building. The Accumulator Room contains a few large storage cells, charged by the motor-dynamo, which are fitted with a suitable series-parallel arrangement, and with rheostats for obtaining and controlling large currents up to 4,000 amperes for testing ammeters and low resistances, etc.

The Magnetic Laboratory contains magnetic instruments and variometers of different patterns, and also a duplicate of the B. A. Electro-dynamometer, which has been completely remodelled and set up with great care for absolute measurements of current. The Laboratory, on the opposite side of the basement, contains a very fine Lorenz apparatus for the absolute measurement of resistance, constructed under the supervision of Prof. Viriamu Jones. It also contains a set of Ewing Seismographs and a pair of Darwin Recording Mirrors for measuring small movements of the soil.

There is a Constant Temperature Room, surrounded by double walls, which contains a Standard Rieffler Clock, and is fitted for comparator work.

The Ground Foor contains at the western corner a small machine shop, fitted with a milling machine and suitable lathes and tools, driven by electric motors, and such appliances as are required for the making and repairing of the instruments, for which the services of a mechanical assistant are retained. There is also a store room for glass, chemicals and cleaning materials, and extensive lockers and lavatories for the use of the students.

The Main Electrical Laboratory is a room 60 feet by 40, and is fitted with a number of brick piers, which come up through the

floor, and rest on independent foundations, in addition to the usual slate shelves round the walls. This room contains a large number of electrometers, galvanometers, potentiometers and other testing instruments of various patterns, and adapted for different uses. It connects with a smaller room at the side, in which are kept the resistance boxes and standards, and also the capacity standards. A small research laboratory, adjoining the electrical laboratory, is fitted up for the study of electrical discharge in high vacua, and for work with Röntgen and uranium radiation, and with ultra-violet light.

The First Floor contains the Main Lecture Theatre, with seats for about 250 students. The lecture table is supported on separate piers, which are independent of the floor. Complete arrangements are provided for optical projection and illustration. The Preparation Room in the rear contains many of the larger pieces of lecture apparatus, but the majority of the instruments, when not in use, are kept in suitable cases in the adjoining apparatus room. On the same floor there is the Heat Laboratory, devoted to advanced work in Thermometry, Pyrometry and Calorimetry, and also to such electrical work as involves the use of thermostats and the measurement of the effects of temperature. There are also two smaller rooms for Professors and Demonstrators.

The Second Floor is partly occupied by the upper half of the Lecture Theatre. There is also an Examination Room for paper work, a Mathematical Lecture Room, with a special apparatus room devoted to apparatus for illustrating Mathematical Physics, and a special Physical Library chiefly devoted to reference books and periodicals relating to Physics. A store room, lavatories and Professors' room occupy the remainder of the flat.

The Third Floor contains the Elementary Laboratory, a room 60 feet square, devoted to elementary practical work in Heat, Sound and Electricity and Magnetism. There is a Demonstrator's room adjoining, and an optical annex devoted to experiments with lenses, galvanometers, etc., which require a darkened room. On the other side of the building there is a spectroscopic room containing a six-inch Rowland grating, with mountings by Brashear, and other large spectrometers and polarimeters. Also a series of smaller optical rooms, including a photometric room, specially fitted for Arc photometry, and a dark room for photographic work. Communication between the different flats is facilitated by means of a hydraulic elevator. The building is lighted throughout by electricity, and heated by hot water. The walls are of pressed brick, and the floors of hard maple. There is a ventilating system, consisting of Tobin tubes and suitable exit flues, assisted by a fan in the roof.

17. Testing Laboratories.—The principal experiments

carried out in these will relate to the elasticity and strength of materials, friction, the theory of structures, the accuracy of springs, gauges, dynamometers, etc. The equipment of this laboratory includes:—

(*a*) A Wicksteed 100-ton and an Emery 75-ton machine for testing the tensile, compressive and transverse strength of the several materials of construction. To the former has been added a specially designed arrangement, by which the transverse strength of girders and beams up to 26 ft. in length can be determined. These machines are provided with the holders required for the various kinds of tests, and new holders have also been specially designed and made in the laboratory for investigating the tensile and shearing strength of timber for wire rope and belt tests, etc. Numerous attachments have also been made to the machines, which have already increased their efficiency. The most recent addition is a double-bearing support for transverse testing.

(*b*) An Impact Machine, with a drop of 30 ft., and with gearing which will enable specimens to be rotated at any required speed, and the blows to be repeated at any required intervals. By means of a revolving drum, a continuous and accurate record of the deflections of the specimens under the blows can be obtained.

(*c*) An Unwin Torsion Machine with a specially designed angle-measurer, by which the amount of the torsion can be measured with extreme accuracy.

(*d*) An Accumulator, furnishing a pressure of 3,600 lbs. per square inch, which is transmitted to the several testing machines, and ensures a perfectly steady application of stress, which is impossible when any form of pump is substituted for an Accumulator.

(*e*) A Blake and a Worthington Steam Pump, designed to work against a pressure of 3,600 lbs. per square inch. The Accumulator may be actuated by either of the pumps, and, if at any time it is desirable to do so, either of the pumps may be employed to actuate the testing machine direct. When in operation the work of the pump and the accumulator is automatic.

(*f*) Extensometers of the Unwin, Martens, Marshall and other types. The extensometer equipment has recently been enriched by seven sets of improved extensometer apparatus designed and made in the laboratory.

(*g*) Portable cathetometers, and also a large cathetometer specially designed and constructed for the determination of the extensions, compressions and deflections of the specimens under stress in the testing machines.

(*h*) An automatic electric motor pump for actuating the Accumulator ; also various electric motors for working the several machines.

(*i*) A drying oven for beams up to 26 ft. in length. The hot air in this oven is kept in circulation by means of a fan driven by an electric motor.

(*j*) Numerous gauges, amongst which may be specially noticed an Emery Pressure Gauge, graduated in single lbs. up to 2,500 lbs. per square inch. All of the testing machines are on the same pressure circuit, and are connected with the Emery gauge and also other standard gauges, including recording gauges. This arrangement provides a practically perfect means of checking the accuracy of the testing.

(*k*) Special apparatus and recording gauge for the testing of hose, etc.

(*l*) Dynamometers for measuring the strength of textile fabrics, the holding power of nails, etc.

(*m*) Apparatus for determining the elasticity of long wires.

(*n*) Apparatus for determining the hardness of materials of construction.

(*o*) Zeiss and other Microscopes.

(*p*) Delicate chemical and other Balances. A very important part of the equipment is the Oertling Balance, capable of indicating with extreme accuracy weights of from .00001 lb. up to 125 lbs.

(*q*) Micrometers of all kinds.

18. Cement Laboratory.—The importance of tests of the strength of mortars and cements is very great. The equip-

ment of the Laboratory for the purpose is on a complete plan, including:—

(*a*) Three one-ton tensile testing machines, representing the best English and American practice.

(*b*) One 50-ton hydraulic compressive testing machine.

(*c*) Volumenometers for determining specific gravity and for determining the carbonic acid in the raw material.

(*d*) Faija steaming apparatus for blowing tests.

(*e*) Mechanical hand and power mixers.

(*f*) Apparatus for determining standard consistency.

(*g*) Vicats' and Gilmore's needles for determining set.

(*h*) Weighing hopper, spring and other balances.

(*i*) Gun metal moulds for tension, compression and transverse test pieces, and special moulds for placing mortar into the moulds under a uniform pressure, which, together with the mechanical mixers, enable the personal error to be eliminated.

(*j*) Sieves of 20, 30, 40, 50, 60, 70, 80, 100, 120 and 180 meshes per lineal inch for determining the fineness.

The laboratory is also fitted with copper-lined cisterns, in which the briquettes may be submerged for any required time, and with capacious slated operating tables, bins and tin boxes for keeping the cement dry for any period.

In the Cement Testing Laboratory, researches have been made on the strength of mortars set under pressure, the effect of frost on natural and Portland cements, the effect of sugar on lime and cement mortars, the strength of lime and cement mortars and of the bricks in brick piers, the effect of fine grinding on the adhesive strength of cements, of using hot water in mixing mortars. Continued tests on the strength of concrete blocks in series are made by Fourth Year Students.

In addition to these researches, a large amount of work is done each year by the Third Year students, in investigating the specific gravity, fineness, setting properties, constancy of volume, and the tensile, compressive and transverse strengths of cement, both neat and with the sand.

19. Thermodynamic Laboratory.—The Thermodynamic Laboratory is furnished with an experimental steam engine of 100 I.H.P., specially designed for the investigation of the

behaviour of steam under various conditions; there are four cylinders, which can be connected so as to allow of single, compound, triple or quadruple expansion, condensing or non-condensing, with or without jackets. The measurements of heat are made by means of large tanks which receive the condensing water and the condensed steam. There are two hydraulic absorption brakes for measuring the mechanical power developed, and an alternative friction brake for the same purpose, Besides this large steam engine, a high speed automatic cut-off by Robb-Armstrong, one by Macintosh & Seymour, an Atkinson Cycle, an Otto gas engine, and a Sterling hot air engine by Woodbury Merrill of Ticonderoga, are provided and completely fitted for purposes of measurement and research. Many smaller instruments are provided or are in course of construction for illustrating the general principles of thermodynamics, such as calorimeters, delicate thermometers and gauges, a mercury column apparatus for investigating the properties of superheated steam and other working fluids, draft gauges, pyrometers, fuel testers, indicators, planimeters and a Moscrop recorder.

A 40 horse power two-stage air compressor of modern design for a central station is under construction in the workshops of the College, and will be added to the Laboratory during next session.

In the boiler room there are available for research five distinct types of boilers, as follows:—One 50 horse power Cornish boiler, two 60 horse power Babcock Wilcox water tube boilers, one 120 horse power locomotive boiler, Belpaire type; one 120 horse power internally fired tubular boiler, by Robb of Amherst; and one 180 horse power Yarrow boiler, fitted in a closed stokehold for forced draft.

During the present session the following special researches were undertaken by various groups of Fourth Year students:—

(1) Experiment on the laws of slide-valve leakage.
(2) Experiments on the condensation of steam on a large scale by a new method.
(3) On the forces acting on cutting tools, and on the leading screw in a lathe.
(4) Economy trials, under varying conditions, of a small tandem compound steam engine.

(5) The value of the Pitot tube in fan testing.
(6) On the viscosity and friction of lubricants.

A series of trials of the Robb Automatic cut-off engine and of the large experimental engine, working compound, with electrical thermometers, in the cylinder walls, at various speeds and ratios of expansion; as also a series of trials on the Robb and on the Locomotive Boilers, were carried out by the Fourth Year Students.

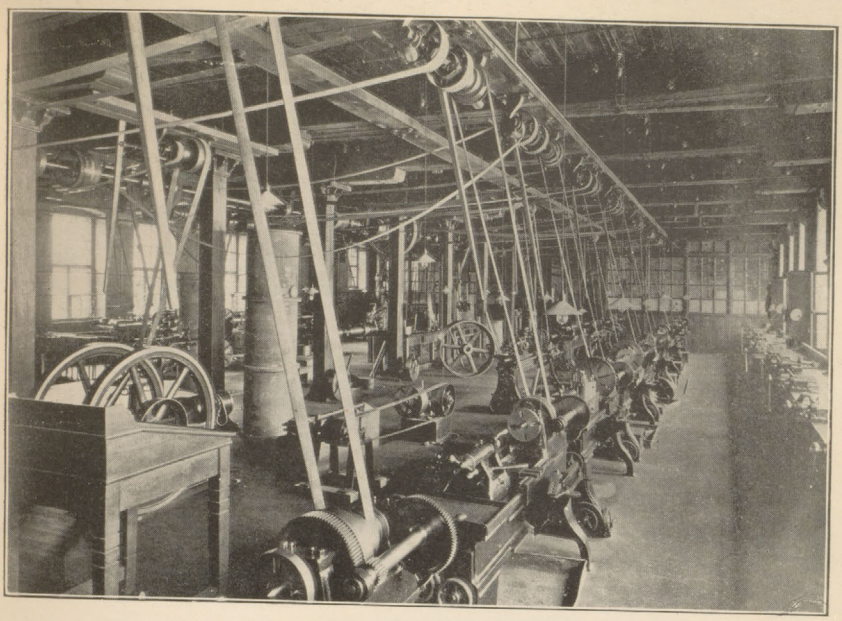
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§ XV. MUSEUMS.

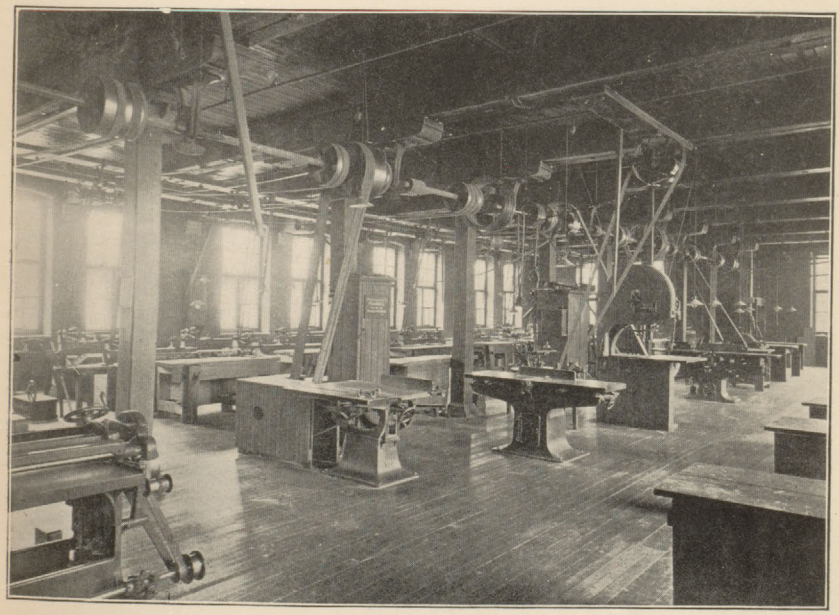
The Peter Redpath Museum contains large and valuable collections in Botany, Zoology, Mineralogy and Geology, arranged in such a manner as to facilitate the work in these departments. Students have access to this Museum, in connection with their attendance on the classes in Arts in the subjects above named, and also by tickets which can be obtained on application. Students will also have the use of a Technical Museum, occupying the whole of the third storey of the Engineering Building. Amongst other apparatus, the Museum contains the Reuleaux collection of kinematic models, presented by Sir William Macdonald, and pronounced by Professor Reuleaux to be the finest and most complete collection in America.

Architectural Equipment.—The Architectural Department has been endowed by Sir Wm. Macdonald, the founder, with a very thorough equipment for practical purposes of instruction; this is at present in course of provision and completion. In the Museum of the Engineering Building is included a large collection of casts both of architectural detail and ornament (illustrative of the historical development of the various styles) and of architectural and figure sculpture. The freehand-drawing classes for architectural students, as also the classes of architectural drawing and design, are conducted in this portion of the building.

A special architectural department has been added to the University Library, and numerous works of reference have been added to the Faculty Library, for the use of students in the classes of design. A collection of architectural photo-



Machine Shop.



Pattern Shop.

graphs is being formed in addition to diagrams and a very complete series of lantern slides in illustration of the historical courses. Diagrams, models and specimens of materials and fittings are also included for use in the courses on building construction and materials, sanitation, etc.

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§ XVI. WORKSHOPS.

The workshops, erected on the Thomas Workman Endowment, have a floor area of more than 25,000 sq. ft.

The practical instruction in the workshops is designed to give the Student some knowledge of the nature of the materials of construction, to familiarize him with the more important hand and machine tools, and to give him some manual skill in the use of the same. For this purpose, the Student, during a specified number of hours per week, will work in the shops under the superintendence of the Professor of Mechanical Engineering, aided by skilled mechanics. The courses commence with graded exercises, and gradually lead up to the making of joints, members of structures, frames, etc., finally concluding in the iron-working department with the manufacture of tools, parts of machines, and, if possible, with the building of complete machines.

The equipment includes the following:

In the Carpenter, Wood-Turning and Pattern-Making Departments.—Carpenters' and pattern-makers' benches, wood-lathes, a large pattern-maker's lathe, circular-saw benches, jig and band saws, buzz-planer, wood-borer, universal wood-worker, etc.

In the Machine Shop.—The most improved engine lathes, a 36-in. modern upright drill, with compound table, universal milling machine, with vertical milling attachment, hand lathes, planer, universal grinding machine, universal cutter and reamer grinder, buffing machine, 1 16-in. patent shaper, vise-benches, etc.

In the Smith Shop.—Forges, hand drill, and a power hammer.

In the Foundry.—A cupola for melting iron, core oven, brass furnace, moulders' benches, etc.

The machinery in the shops is driven by a 50 I.H.P. compound engine and a 10 I.H.P. high speed engine.

In the workshops, a 40 H. P. air compressor has formed the staple object upon which energy has been spent. This, it is hoped, will be completed and added to the Thermodynamic Laboratory during the present year. A large boring bar, with automatic feed and double heads, an Emery brass buffing machine, an overhead travelling crane of one ton capacity, with two transverse motions, in the foundry; and two electric arc lamps and projecting lanterns complete for class denonstration have been the principal results of steady application in the workshops.

Boarding Houses, etc.

Good board and lodging may be obtained at $18 per month; or separately, board at $12 to $14, and rooms $5 to $10 per month. The cost of drawing instruments for the whole course may be placed at from $15 to 30. Gowns and overalls, $7 to $10. Books per session $10 to $30.

Estimated necessary cost per session of 7½ months, including fees, but exclusive of clothing and travelling expenses, $300 to $360.

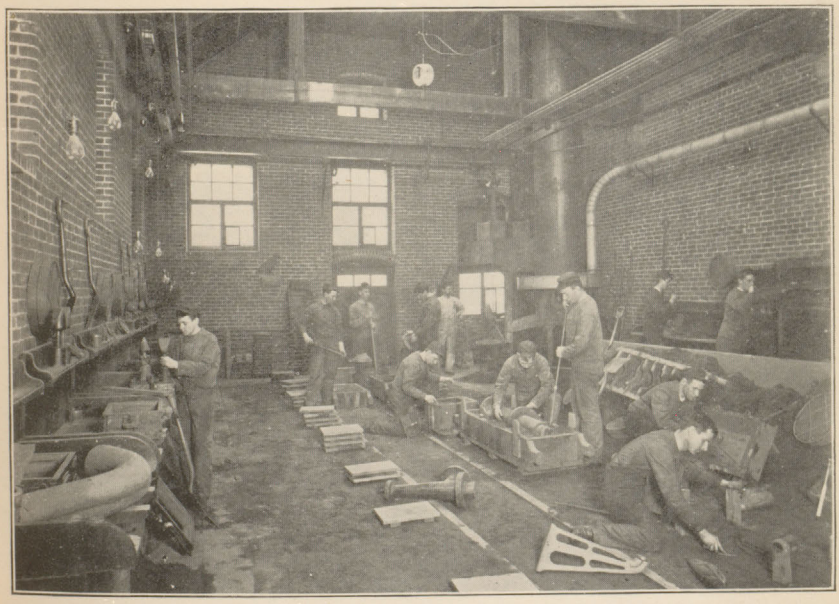
Students can obtain a list of boarding houses on application to the secretary.

The McGill Applied Science Society.

The Graduates' and Undergraduates' Applied Science Societies have been amalgamated during the past session under the above title. The province of the new Society is to promote a closer relationship between the Faculty and its graduates and undergraduates. This object is to be attained by the issuing of publications which will keep the graduates advised of the progress of the Faculty, by an endeavour on the part of the Faculty to keep informed as to the whereabouts and progress of each of its graduates, and by the graduates placing the benefits of their experience at the disposal of the



The Smithy.



The Foundry.

undergraduates in the form of papers and addresses on technical subjects.

During the year 1899 the Society is publishing its matter in the columns of the "Canadian Engineer," copies of which journal are sent free to every *bona fide* member of the Society.

The officers for the year 1899-1900 are as follows :—

Hon.-President, Dr. H. T. Bovey.

Advisory Committee.—Prof. F. D. Adams, J. M. McCarthy, M. L. Hersey, A. L. Mudge, R. F. Ogilvy.

Hon. Sec.-Treas., J. G. G. Kerry, Engineering Building, McGill University.

President, R. H. Gillean, Mining and Chemistry, '00.

1st Vice-President, J. T. Anglin, Civil and Architecture, '00.

2nd Vice-President, J. G. Glassco, Electrical, '00.

3rd Vice-President, A. W. Macmaster, Mechanical, '00.

Secretary, B. S. McKenzie, '01.

Treasurer, E. E. Palmer, '01.

2nd Year Representatives.—A. E. Beck and H. E. Scott.

Editorial Board.—G. M. Cary, Chairman; S. J. Burgoyne, G. M. Hamilton, H. A. Burson.

The McGill Mining Society.

This Society was organized in 1891-2 by the Undergraduates of the Mining Department, but its scope has since been enlarged, and now any graduate or undergraduate interested in mining and allied work is eligible for membership. Meetings are held fortnightly for reading and discussion of papers on subjects of interest to the Society, and frequent lectures are given by outside professional men.

The primary object of the Society is of course to give the Undergraduates an opportunity to meet one another and to become acquainted with the older members of the Society, but an almost equal part of its work consists in keeping the graduates of the department in touch with the work of the University.

The officers for the year 1899-1900 are:—

Honorary President, Dr. B. J. Harrington.
President, G. P. Macmillan, Sc., '00.
Vice-President, F. Cowans, Sc., '00.
Sec.-Treasurer, A. R. Archer, Sc., '01.

The Committee consists of the officers and of two members from each year, who are elected at the beginning of the session.

STATEMENT OF RESEARCH WORK IN THE LABORATORIES, 1898-99.

"Investigation of the causes of the solubility of iodine in solutions the various iodines."

"The optical activity of the phenyl-brome-acetic ethers."

"The optical activity of the salts of madelic acid at high dilutions." and "The inversion of optical activity of chor-phenyl-acetic acid by means of potash."

"A new bleaching process."

"On the loss of head due to bends in pipes" (Roy. Soc. Can.).

"On the phenomena of jets springing from non-circular orifices" (Roy. Soc. Can.).

"On the effect of temperature on the velocity in pipes, with special reference to the relation between the index of roughness and the index of fluidity."

"On the Venturi water meter."

"A new method of measuring leakage co-efficients in dynamos."

"Relation of short circuit core losses to load losses in A. C. dynamos."

"On the laws of leakage of steam and water across a slide valve face when at rest and in motion."

"On the rate of condensation of steam with a new form of apparatus for measuring the same."

"Some experiments on the application of Pitot's tube to measure the flow of steam and air in pipes."

"Experiments on the forces required by the cutting tool and the leading screw in a lathe; with a new automatic recording device."

"Experiments on the experimental engine, taking the temperatures of the cylinder walls."

"Progressive boiler trials on the new Robb-Mumford and the new locomotive boilers."

" Economy trials of a Woolf compound engine."
" Experiments on the properties of lubricants."
" On the specific heat of water and mercury."
" On the damping of electrical oscillations."
" On the density of solutions."
"On the absolute determination of the E. M. F. of the Clarke cell."
" On the temperature and circular magnetization effects on iron."
" On uranium and thorium radiation."
" On the discharge of electrification by ultra-violet light."
" On vibration effect of moving machinery."
" On time effects in magnetization of iron."
" On the effect of combined tension and torsion upon steel bars."
" On the effect of size upon the strength of a concrete cube."
" On the strength of rollers."
" On the influence of annealing on the tensile strength of copper under repeated stresses."
" On the torsional rigidity of round and square steel bars."
" The British Columbia Miner's Inch."
" On the application of the cyanide method to arsenical gold ores."
" Comparisons of the several modifications of the chlorination and bromination processes as applied to identical lots of auriferous concentrates."
" On the concentration of molybdenite from quartz and granite rocks."

Etc., etc., etc.

FACULTY OF APPLIED SCIENCE—TIME TABLE—FIRST AND SECOND YEARS.

Years	Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
First Year.	9	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Shopwork.
	10	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Mathematics.	Do
	11		English.	Lettering.	Geom. Drawing (*a*). Lettering (*b*)	English.	Do
	12	Experimental Physics.		Lettering.	Geom. Drawing. (*a*). Lettering. (*b*).	Experimental Physics.	Do
	2 to 5	Mathematical Lab. (*a*) Shopwork.	Mathematical Lab. (*a*) Physics.	Desc. Geometry.	Physics. Shopwork.	Freehand Drawing.	
Second Year.	9	Mathematics, 1, 2, 3, 4, 5, 6.	Mathematics, 1, 2, 3, 4, 5, 6.	Mathematics, 1, 2, 3, 4, 5, 6.	Mathematics, 1, 2 3, 4, 5, 6.	Drawing, 2. Freehand Drawing, 1.	Archt. Drawing, 1. Shopwork, 2, 3, 4, 5.
	10	Chemical Lab., 2, 4, 5, 6. Theory of Archt., 1, 2.	Chemistry, 6. History of Archt., 1. Surveying, 2, 5.	Mathematics, 1, 2, 3, 4, 5, 6.	Chemical Lab., 6. Kinematics, 3, 4. Surveying, 2, 5.	Drawing, 2. Freehand Drawing, 1.	Do
	11	Chemical Lab. 3, 4, 5, 6. Freehand Drawing, 1.	Chemistry, 1, 2, 3, 4, 5, 6.	Chemistry, 6. History of Archt., 1, Kinematics, 3, 4. Surveying, 2, 5.	Building Const., 1, 2. Chemical Lab., 6. Kinematics, 3, 4.	Mathematics. 1, 2, 3, 4, 5, 6.	Do
	12	Chemical Lab., 3, 4, 6. Freehand Drawing, 1. Mechanism, 2, 5.	Exp. Physics, 1, 2, 3, 4, 5, 6.	Chemistry, 1, 2, 3, 4, 5, 6.	Experimental Physics, 1, 2, 3, 4, 5, 6.	Chemistry, 1, 2, 3, 4, 5, 6.	Do
	2 to 5	Physical Lab., 1, 2, 5, 6.	Desc. Geometry, 1, 2, 3, 4, 5, 6.	Archt. Drawing, 1. Chemical Lab., 6. Mapping, 2, 5. Shopwork, 3, 4.	Archt. Drawing, 1. Chemical Lab, 6. Mapping 2, Mechl. Drawing, 3, 4, 5.	Chemical Lab., 1, 2, 5, 6. Physical Laboratory, 3, 4.	

(*a*) First Term. (*b*) Second Term. (*c*) After Nov. 1st. *The Chemical Laboratories are open to Second, Third and Fourth Year classes daily (Saturday excepted) from 9 a.m. to 5 p.m 1. Architectural Students. 2. Civil Engineering Students. 3. Electrical Engineering Students. 4. Mechanical Engineering Students. 5. Mining Engineering Students. 6. Practical Chemistry Students.

FACULTY OF APPLIED SCIENCE--TIME TABLE—THIRD YEAR.

Hours.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9	Art History, 1. Experimental Physics, 1, 2, 3, 4, 5, 6.	Architecture, 1. D.C. Dyn Machy., 3. Mineralogy (*b*), 5, 6. Roads and Canals, 2.	Dyn. of Mach., 3, 4. Freehand Drawing, 1. Geology, 2, 5, 6.	D.C. Dynamo Machy., 3. Desc. Geom., 2. Mineralogy, 5, 6. Specifications, etc., 1.	Freehand Drawing, 1. Mathematics, 1, 2, 3, 4, 5. Machine Design, (*b*) 4.	Archt. Designing (*a*) 1. Dynamo Lab. (*a*) 4. Mining (*d*) 5. Testing Lab. (*b*) 1, 2, 3, 4, 5.
10	Dyn. of Mach., 3, 4. Freehand Drawing, 1. Geology, 2, 5, 6.	Surveying, 1. Thermodynamics, 2, 3, 4, 5.	Freehand Drawing, 1. Shopwork, 3, 4. Surveying, 2, 5.	Machine Design, 3, 4, 5. Surveying, 1.	Freehand Drawing, 1. Geology, 2, 5, 6. Thermo. Lab. (*b*) 3, 4.	Do
11	Chemistry, 6. Freehand Drawing, 1. Surveying 2, 5.	Theory of Structures, 1, 2, 3, 4, 5.	Metallurgy, 5, 6. Shopwork, 3, 4. Surveying, 1.	Chemistry, 6. Experimental Physics. (*a*) 1, 2, 3, 4, 5. Mathematics (*b*) 1, 2, 3, 4, 5.	Graphical Statics (*a*) 1, 2, 3, 4, 5. Thermo. Lab. (*b*) 2, 3, 4, 5.	Do
12	Mathematics, 1, 2, 3, 4, 5.	Theory of Structures, 1, 2, 3, 4, 5.	Hist. of Archt., 1. Municipal Eng., 1, 2. Ore-dressing, 5, 6. Shopwork, 3, 4.	Theory of Structures, 1, 2, 3, 4, 5.	Graphical Statics (*a*) 1, 2, 3, 4, 5. Hygiene (*b*) 1. Thermo. Lab. (*b*) 2, 3, 4, 5.	Museum Work in Geology (*b*) 2, 5.
2 to 5	Archt. Designing (*b*), 1. Desc. Geometry (*a*), 1, 2. Mechl. Drawing, 3, 4, 5.	Archt. Designing, 1. Dynamo Lab., 3. Mapping, 2, 5.	Chem. Lab., 5, 6. Mapping, 1, 2. Physical Lab., 3, 4.	Archt. Designing, 1. Det. Mineralogy, 5, 6. Dynamo Lab., 3. Mechl. Drawing, 4. Modelling (*b*), 1.	Archt. Designing (*a*) 1. Chemical Lab. (*b*) 5, 6. Graphic Statics (*b*) 1, 2. Physical Lab. (*a*) 3, 2, 5, 6. Shopwork, 4, (*b*) 3.	

(*a*) First Term. (*b*) Second Term. (*c*) First half of first Term. (*d*) Second half of first Term. 1. Architectural Students. 2. Civil Engineering Students. 3. Electrical Engineering Students. 4. Mechanical Engineering Students. 5. Mining Engineering Students. 6. Practical Chemistry Students.

FACULTY OF APPLIED SCIENCE—TIME TABLE—FOURTHYEAR.

HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
9	Art. History, 1. Mach. Design (*a*) 3, 4. Mining, 5. Theory of Structures, 2.	Designing, 1. Dyn. of Machy., 3, 4. Mining, 5.	Designing, 2. Geology (*a*) 1. Metallurgy (*a*) 4, 5. Iron, steel and alloys (*b*) 4, 5.	Hydraulics (Machy., etc.), 2, 3, 4, 5. Specifications, etc., 1.	Hist. of Archt., 1. Machinery, 2, 3, 4, 5.	Designing (*b*) 1. Geodetic Lab., 2. Geology (*a*) 1. Mining Lab., 5. Testing Lab. (*c*) 4. Shopwork, 4.
10	Freehand Drawing, (*b*) 1. Geology (*a*) 1. Hydraulics, 2, 3, 4, (*a*) 5. Hydraulics (*b*) 5 or Electro-Chemistry (*b*)5,6.	Canadian Geology (*b*) 5. Designing, 1. Elect. Eng., 3. Ore Deposits (*d*) 5. Thermo. Lab., 4.	Designing, 2, 5. Dyn. of Machy., 4. Elec. Eng., 3. Freehand Drawing, 1.	Transm. and Distrib. of Power, 2, 3, 4, 5.	Elect. Eng. (*a*) 3. Freehand Drawing (*b*) 1. Geodesy, 2. Geology (*a*) 1. Mechl. Eng. Lab., 4. Mining Lab., 5.	Do
11	A. C. Machy., 3. Freehand Drawing, 1. Geology (*b*) 5. Petrography (*a*) 5.	Designing, 1. Elect. Measurements, 3. Metallurgy, 5. Org. Chemistry, 6. Theory of Structures, 2. Thermo. Lab., 4.	A.C. Machy., 3. Designing, 2, 5. Dyn. of Machy., 4. Freehand Drawing, 1.	Dyn. of Mach., 3, 4. Org. Chemistry, 6. Railway Eng., 2, 5.	A.C. Machy., 3. Freehand Drawing, 1. Mechl. Eng. Lab., 4. Mining Lab. 5. Theory of Structures, 2.	Do
12	Chemistry, 6. Geodesy, 2. Freehand Drawing (*a*) 1. Metallurgy, non-ferous, 5. Thermodynamics, 3, 4. Water Colouring (*b*) 1.	Designing, 1. Electro-Chem., 3 (*b*) 6. Railroad Eng., 2, 5. Thermo. Lab., 4.	Dyn. of Machy., 4. Palæontology (*b*), 5. Pract. Geology (*a*) 5. Municipal Eng., 1, 2.	Chemistry, 6. Designing, 5. Thermodynamics, 3, 4.	Electro-Chem., 6 (*b*) 3. Freehand Drawing (*a*) 1. Hygiene (*b*) 1. Mechl. Eng. Lab., 4. Mining Lab., 5. Theory of Structures, 2.	Museum Work in Geology (*b*) 2, 5.
2 to 5	Chemical Lab., 5, 6. Designing, 1, 2, 4. Dynamo Lab., 3.	Chem. Lab, 6. Designing (*a*) 1, 5. Electro-Chem. Lab., 5. Physics, 3. Testing Lab., 2. Thermo. Lab., 4.	Assay Lab. (*b*) 5. Chemical Lab. (*d*) 5, 6. Designing, 1. Dyn. of Machy. (*a*) 4. Dynamo Lab., 3. Hydraulic Lab. (*b*) 2, 4. Metallur. Lab. (*c*), 4, 5.	Assay Lab. (*b*) 5, 6. Chem. Lab. (*a*) 5, 6. Designing, 4. Hydraulic Lab. (*a*.) 1. Hydraulic Lab Modelling (*b*), 1. Physics, 3. Test. Lab., 2.	Chemical Lab., 6. Designing, 1. Dynamo Lab., 3. Graphical Statics, 2. Mechl. Eng. Lab., 5. Mining Lab., 5.	

(*a*) First Term. (*b*) Second Term. (*c*) First half of first Term. (*d*) Second half of first Term. 1. Architectural Students. 2. Civil Engineering Students. 3. Electrical Engineering Students. 4. Mechanical Engineering Students. 5. Mining Engineering Students. 6. Practical Chemistry Students.

Faculty of Law.

(Macdonald Foundation.)

THE PRINCIPAL : Ex. Officio.

PROFESSORS EMERITI.

MATTHEW HUTCHINSON, D.C.L.
HON. J. EMERY ROBIDOUX, D.C.L.
HON. MR. JUSTICE WURTELE, D.C.L.

PROFESSORS.

F. P. WALTON, B.A. (Oxon.), LL.B. (Edin.), Gale Professor of Roman Law, and Dean of the Faculty.
HON. C. A. GEOFFRION, Q.C., D.C.L., P.C.)
A. MCGOUN, M.A., B.C.L. | Professors
T. FORTIN, LL.L., D.C.L. } of
HON. MR. JUSTICE DOHERTY, D.C.L. | Civil Law.
W. DE M. MARLER, B.A., D.C.L.)
E. LAFLEUR, B.A., B.C.L., Professor of International Law.
HON. MR. JUSTICE DAVIDSON, D.C.L., Professor of Criminal Law.
R. C. SMITH, B.C.L., Professor of Commercial Law.
The above constitute the Faculty.

LECTURERS.

P. C. RYAN, B.C.L.
AIMÉ GEOFFRION, B.C. L.
GORDON W. MACDOUGALL, B.C.L.

SESSIONAL LECTURER IN MEDICAL JURISPRUDENCE.

WYATT G. JOHNSTON, M.D.

The Curriculum extends over three years. It includes courses of lectures upon all the branches of the Law of the Province of Quebec, and also upon Roman Law, Legal History, and the Constitutional Law of England, and of the Dominion. Its primary design is to afford a comprehensive legal education for Students who intend to practice at the Bar of the Province. In all the courses the attention of Students will be directed to the sources of the

Law, and to its historical development. During their first year the students will attend a course of one hundred lectures on Roman Law, from which the Law of this Province is in great part derived. In the lectures on Legal History the relations of our Law with the Law of France and its History since the Cession will be explained. First Year Students will also attend courses on the Law of Persons; the Law of Real Estate; the Law of Obligations; and the Elementary rules of Procedure. The remaining branches of the law, civil, commercial and criminal, will be dealt with in the Second and Third Years. During the three years' course the Civil Code, the Criminal Code and the Code of Civil Procedure will be covered, and lectures will also be given upon subjects such as Bills of Exchange, Merchant Shipping, and Banking, which are regulated mainly by special statutes. A course of lectures upon Medical Jurisprudence is generally arranged for.

Students have the free use of the Law Library of the Faculty. This includes the law libraries of the late F. Griffin, Esq., Q.C., Mr. Chancellor Day, Mr. Justice MacKay and Mr. Justice Torrance. Many new books have been added, and the principal reports and legal periodicals are taken. A special room for Law Students is provided in the Redpath Library. This room is open during the day, and in the evenings from eight to ten o'clock.

The lectures are delivered in the rooms furnished for the Faculty in the East Wing of McGill College by its munificent benefactor, Sir Wm. C. McDonald, K.C.M.G. The Faculty desire to impress upon English students the great importance of obtaining a familiar knowledge of French. In the practice of the profession in this Province it is almost indispensable that a lawyer shall be able to write and speak French, and to understand it when it is spoken. Gentlemen who intend to become students of law are urged to pay special attention to this subject.

Those students who are able to take the B.A. course before entering upon their legal studies are strongly recommended to do so. Those for whom this is impossible are advised to attend the courses in the Faculty of Arts for two years.

The requirements for Matriculation in the Faculty will be found below in the Faculty Regulations.

Scholarships and Prizes.

Various scholarships and prizes will be awarded to the students of each year who obtain the highest distinction at the Examinations in April, 1900.

No scholarship or prize will, however, be awarded to any student unless in the estimation of the Faculty a sufficiently high standing be attained to merit it.

Classification of Students.

Matriculated Students who do not take the whole course are classed as Partial Students, and are not entitled to proceed to the Degree of B.C.L.

Occasional Students will be admitted for attendance on any particular series of Lectures without matriculation.

Students who have completed their course of three years, and have passed a satisfactory examination, will be entitled, upon the certificate and recommendation of the Faculty, to the Degree of Bachelor of Civil Law.

FACULTY REGULATIONS.

1. Any person desirous of becoming a Matriculated Student may apply to the Secretary of the University for examination and entry in the Register of Matriculation, and may procure a ticket of Matriculation and tickets of admission to the Lectures for each Session of the Course.

2. The degree of B.A. obtained from any Canadian or other British University, or a certificate of having passed the examination before the Bar for admission to study Law in the Province of Quebec, or the intermediate Examination in the Faculty of Arts in McGill University will be accepted in lieu of examination for Matriculation in this Faculty. For other candidates the Matriculation examination this year will be in the following subjects:—

Latin.—Virgil, Aeneid, Book. I.; Cicero, Orations I. and II. against Catiline, Latin Grammar.

Candidates will be expected to be able to translate a simple passage at sight.

French.—De Fivas' "Grammaire des Grammaires;" *Molière, "Le Bourgeois Gentilhomme"; †Translation into French of Macaulay's Essay on Frederick the Great.

Candidates must be able to translate French easily, and must have some familiarity with the spoken language.

Exercises in Composition and Grammatical Analysis, in English and French.

Mathematics.—Arithmetic; Algebra to the end of Simple Equations; Euclid, Books I., II., III.

History.—White's Outline of Universal History (or any equivalent manual); *Green's Short History of the English People; Miles' School History of Canada; †Duruy, Histoire de France.

Literature.—*Collier's Biographical History of English Literature; †Laharpe Course de Littérature; †Lefranc, Course de Littérature.

Rhetoric.—Whately's Rhetoric; Blair's Lectures (small edition).

Philosophy.—Whately's Logic; †Logique de Port Royal; †Cousin, Histoire de la Philosophie; *Stewart's Outline of Moral Philosophy.

N.B.—The works mentioned above preceded by an asterisk are for English students only. Those preceded by a cross are for French Students only. The remainder are for both English and French.

The examination will be held on the first day of the Session at 10 a.m.

3. Students of Law shall be known as of the First, Second and Third Year, and shall be so graded by the Faculty. In each year, Students shall take the studies fixed for that year, and those only, unless by special permission of the Faculty.

4. The register of Matriculation shall be closed on the 1st October in each year, and return thereof shall be immediately made by the Dean to the Registrar of the University. Candidates applying thereafter may be admitted on a special examination to be determined by the Faculty; and, if admitted, their names shall be returned in a supplementary list to the Registrar.

5. Persons desirous of entering as Partial Students shall apply to the Dean of the Faculty for admission as such Students, and shall obtain a ticket or ticket for the class or classes they desire to attend.

6. Students who have attended collegiate courses of legal study in other Universities for a number of terms or sessions may be admitted, on the production of certificates, to a like standing in this University.

7. All students shall be subject to the following regulations for attendance and conduct:—

(*a*) Gowns must be worn during attendance at lectures and when in the College building.

(*b*) A class-book shall be kept by each Professor and Lecturer, in which the presence or absence of Students shall be carefully noted, and the Faculty shall, after examination of such class-book, decide which Students shall be deemed to have been sufficiently regular in their attendance to entitle them to proceed to the examination in the respective classes.

(*c*) Punctual attendance on all the classes proper to his year is required of each student. Professors will note the attendance immediately on the commencement of their lectures, and will omit the names of Students entering thereafter, unless satisfactory reasons are assigned. Absence or tardiness, without sufficient excuse, or inattention or disorder in the Class-room, if persisted in after admonition by the Professor, will be reported to the Dean of the Faculty, who may reprimand the Student or report to the Faculty, as he may decide. While in the building, or going to and from it, Students are expected to conduct themselves in the same orderly manner as in the Class-rooms. Any Professor observing improper conduct in the Class-rooms, or elsewhere in the building, will admonish the Student, and, if necessary, report him to the Dean.

(*d*) When Students are reported to the Faculty under the above rules, the Faculty may reprimand, report to parents or guardians, disqualify from competing for prizes or honours, suspend from classes, or report to the Corporation for expulsion.

(*e*) Any Student injuring the furniture or building will be required to repair the same at his own expense, and will, in addition, be subject to such penalty as the Faculty may see fit to impose.

(*f*) The number of times of absence, from necessity or duty, that shall disqualify for the keeping of a Session, shall in each case be determined by the Faculty.

(*g*) All cases of discipline involving the interests of more than one Faculty, or of the University generally, shall be reported to the Principal, or, in his absence, to the Vice-Principal.

8. The College year shall be divided into two terms, the first extending to the Christmas vacation, and the second from the expiration of the Christmas vacation to the end of April following.

The lectures will be delivered between the hours of half-past eight and half-past nine in the morning, and between four and half-past six in the afternoon; and special lectures in the evening, at such hours and in such order as shall be determined by the Faculty. Professors shall have the right to substitute an examination for any such lecture.

9. At the end of each College year there shall be a general examination of all the classes, under the superintendence of the Professors, and of such other examiners as may be appointed by the Corporation. The examination shall be conducted by means of printed questions, answered by the Students in writing in the presence of the Examiners. The result shall be reported as early as possible to the Faculty.

After the examinations, the Faculty shall decide the general standing of the Students.

10. At the end of the third College year there shall be a Final Examination of those Students who have completed the Curriculum. This Examination shall be conducted partly by written papers and partly orally. It shall cover all the subjects upon which lectures have been delivered during the three years' course. Those Students who satisfy the examiners shall be entitled, after making the necessary declaration and payment of the Graduation Fee, to proceed to the Degree of B.C.L. The Elizabeth Torrance Gold Medal shall be awarded to the Student who shall obtain the highest marks in the Examination, provided his answers shall, in the estimation of the Faculty, be of sufficient merit to entitle him to this distinction. There shall be no Sessional Examination of Students who are candidates in the Final Examination.

11. No Student shall be considered as having kept a Session unless he shall have attended regularly all the courses of Lectures, and shall have passed the Sessional Examinations to the satisfaction of the Faculty in the classes of his year.

12. The Faculty shall have the power, upon special and sufficient cause shown, to grant a dispensation to any Student from attendance on any particular Course or Courses of Lectures, but no distinction shall in consequence be made between the Examinations of such Students and those of the Students regularly attending Lectures.

13. Every Candidate, before receiving the Degree of B.C.L., shall make the following declaration:—

Ego A.B. polliceor sancteque recipio, me, pro meis viribus, studiosum fore communis hujus Universitatis boni, et operam daturum ut ejus decus et dignitatem promoveam, et officiis omnibus ad Baccalaureatus in Jure Civili gradum pertinentibus fungar.

14. The fees in the Faculty will be as follows for Students matriculating after Nov., 1897:—

Matriculation or Registration Fee.. .. ..$ 5 00
Sessional Fee by Ordinary Students (including Grounds Fee).. 52 00
Grounds Fee, payable by Partial Students.. .. .. 2 00
Graduation Fee, including registration as voter in election of fellows.. .. .. 12 50
Sessional Fee by Partial Students, for the course of Roman Law, $20; for each of the courses on Successions, Criminal Law, and Civil Procedure, $15; and for each one of the shorter courses 10 00
Students matriculated before Nov., 1897, will continue to pay a Sessional fee of.. .. .. 36 00

Matriculation and Sessional Fees must be paid on or before Oct. 1st; and, if not so paid, the Student in default shall incur a fine of $3; his name shall be removed from the books; and his attendance at lectures shall not be credited until his fees and the said fine have been paid. Students already on the books of the University shall not be required to pay any Matriculation Fee.

15. Partial Students may be admitted into class on such terms as shall be arranged by the Faculty.

16. The requirements and conditions for obtaining the Degree of D.C.L. in course can be ascertained upon application to the Dean.

SYLLABUS.

Tuesday, 5th September, 1899, Matriculation, Introductory Lecture by the Dean.
Wednesday, 6th September, Ordinary Lectures begin.
Friday, 8th December. Last day for notice to be sent to Secretary of Section of the Bar by candidates at the January Examinations for admission to study or to practice Law in the Province of Quebec.
Monday, 8th January, 1900. Lectures, Second Term, begin.
Tuesday, 9th January. Bar Examinations take place at Montreal.
Friday, 27th April. Convocation for Degrees in Law.
Saturday, 3rd June. Last day for notice to be sent to Secretary of Section of the Bar by Candidates at the July Examination for admission to study or to practice Law in the Province of Quebec.
Tuesday, 4th July. Bar Examinations take place at Quebec.

EXAMINATIONS.

The Examinations are held at the close of the session.

APPENDIX.

The attention of intending Students is called to the following provisions of the Revised Statutes of Quebec and amendments, as bearing on the requirements for the study and practice of Law in the Province.

Article 3544 R.S.Q.—Examinations for admission to study and to practice law in the province of Quebec are held at the time and place determined by the General Council.

The places and dates as at present fixed are:

MONTREAL.....Tuesday, 9th Jan., 1900.
QUEBEC.....Tuesday, 2nd July, 1900.

and alternately in Montreal and Quebec every six months, namely—at Montreal on the second Tuesday of each January, and at Quebec on the first Tuesday of each July.

All information concerning these examinations can be obtained from the General Secretary's Office. The present General Secretary is Arthur Globensky, Esq., Montreal.

Article 3546.—Candidates must give notice as prescribed by this article at least one month before the time fixed for the examination to the Secretary of the Section in which he resides, or in which he has resided for the last six months.

The present Secretary of the Montreal Section is J. C. Walsh, Esq., 1608 Notre Dame Street, Montreal.

Article 3503a.—Added by Statute of Quebec, 53 Victoria (1890), Cap. 45, provides that Candidates holding the diploma of Bachelor of Arts, Bachelier-es-Lettres, or Bachelier-es-Sciences from a Canadian or other British University are dispensed from the examination for admission to study. Such Candidates are required to give the notice mentioned above.

Article 3548 R.S.Q. (as altered by by-law of the General Council). On giving the notice prescribed by Article 3546, the Candidate pays the Secretary a fee of $2, and makes a deposit of $30 for admission to study, or of $70 for admission to practice, which deposit, less $10, is returned in case of his not being admitted.

Article 3552 (amended 1894, Q. 57 Vic., c. 35).—To be admitted to practice, the Student must be a British subject, and must have studied regularly and without interruption during ordinary office hours, under indentures before a Notary as Clerk, or Student with a practicing Advocate, during Four Years, *dating from the registration of the certificate of admission to study.* This term is reduced to Three Years in the case of a student who has followed a regular law

course in a University or College in this Province and taken a degree in law therein.

The By-Laws passed by the General Council of the Bar of the Province of Quebec, 16th Sept., 1886, and amended 10th Feb., 1892, provide as follows:—

PROGRAMME FOR UNIVERSITY COURSE OF LECTURES ON LAW.

Art. 42.—A course of lectures on law given and followed at a University or College in this Province, and a diploma or degree conferred on students by such university or college, shall be held to be such as contemplated in art. 3552 R.S.Q. only when the university or college conferring the degree and the student who receives it shall have efficiently followed the programme herein set forth. This article and article 44 shall apply to students already admitted only as regards lectures to be given after the 1st of January, 1887.

2. The subjects on which lectures shall be given, and the number of lectures required on each subject for a regular course of lectures on law in a university or college shall be as follows—:

Roman Law:—103 Lectures.

This subject shall include an introduction to the study of Law and the explanation of and comments on the Institutes of Justinian and the principal jurisconsults of Rome.

Civil, Commercial and Maritime Law:—413 Lectures.

Lectures on these subjects shall cover at least three years. They consist of the history of French and Canadian law, the explanation of and comments on the Civil Code of the Province of Quebec and the Statutes relating to Commerce and Merchant Shipping.

CIVIL PROCEDURE:—103 Lectures.

Lectures on this subject shall extend over at least two years. It shall consist of the explanation of and comments on the Code of Civil Procedure and the Statutes amending it, the organisation of the Civil Courts of this Province and the history of the different judicial systems of the country; also, the special modes of procedure provided by statutes and laws of general application.

INTERNATIONAL LAW, Private and Public:—21 Lectures.
CRIMINAL LAW:—69 Lectures.

This subject includes the history of criminal law in Canada, the constitution of criminal courts, criminal procedure, comments on statutes relating to criminal law, the relation of criminal law in Canada to the criminal law of England. The lectures shall extend over two years.

ADMINISTRATIVE AND CONSTITUTIONAL LAW:—41 Lectures.

These subjects include an inquiry into the different political institutions and the public institutions of the country, the powers, organization and procedure of the Federal Parliament and of the Local Legislature, the laws on Education and the Municipal Code.

Art. 43.—Candidates for practice who hold a degree in law from a university or college in this Province, shall produce, with their notices, a certificate from the principal or Rector of such university or college to the effect that they followed a course of lectures on law in the same, during at least three years, in conformity with the by-laws of the Bar; and such certificate shall further specify the number of public lectures at which they shall have attended on each subject mentioned in the foregoing programme, during each of the said three years. The last part of this certificate shall only be required for courses of lectures given after the 1st January, 1897.

Art. 44.—The examiners shall not consider a university degree in law valid for the purposes of admission to the Bar if they find that the candidate has not in fact followed the programme above.

REQUIREMENTS FOR DEGREE OF DOCTOR OF CIVIL LAW.

ADOPTED OCTOBER, 1881.

Every Candidate for the degree of D.C.L. in Course must be a Bachelor of Civil Law of twelve years' standing, and must pass such examination for the Degree of D.C.L. as shall be prescribed by the Faculty of Law. He shall also, at least two months before proceeding to the Degree, deliver to the Faculty twenty-five printed copies of a Thesis or Treatise of his own composition on some subject, selected or approved by the Faculty, such Thesis to contain not less than fifty octavo pages of printed matter, and to possess such degree of merit as shall, in the opinion of the Faculty, justify them in recommending him for the degree.

The candidate shall also pay to the Secretary of the Faculty annually during the period of twelve years, for the retention of his name on the books of the Faculty, a fee of two dollars, to form part of the Library Fund of the Faculty. Upon cause shown, however, and with the consent of the Faculty, such fees may be paid at one time before the granting of the degree.

The Examination for the Degree of D.C.L. in Course, which shall be open to all who have taken the degree of B.C.L. of this University in the past, as well as to such as may take the degree in future, shall, until changed, be on the following subjects and authors, with the requirement of special proficiency in some one of the groups below indicated. In the groups other than the one selected by the Candidate for special proficiency, a thorough acquaintance with two works of each group shall be sufficient, including in all cases the work first mentioned in each group and the first two works in group third. In group first one work on Public and one on Private International Law must be offered.

I. INTERNATIONAL LAW.

A. Public:—

Twiss, Sir T., Law of Nations.

Hall, W. E., International Law.

Harcourt, Sir W. D., Letters by Historians.
Ortolan, T., Diplomatie de la Mer.
De Martens, Droit International.
Holland, Studies in International Law.

B. Private:—

Savigny, Private International Law (Ed. Guthrie).
Bar, Private International Law (Ed. Gillespie).
Foelix, Droit International Privé.
Laurent, Droit Civil International.
Brocher, Droit International Privé.
Fiore, Droit International Privé (Ed. Pradier-Fodéré).
Dicey, Conflict of Laws.
Story, Conflict of Laws.
Lafleur E., Conflict of Laws.

2. Roman Law.

Maynz, Droit Romain.
Muirhead's Roman Law.
Girard, Manuel de Droit Romain.
Ortolan's Institutes (Ed. Labbé.)
Savigny, Roman Law in the Middle Ages.
Cuq, Les Institutions Juridiques.
Puchta, Institutionem.
Krüger, Römische Rechtsquellen.
Roby's Introduction to the Digest.
Hunter's Roman Law.

3. Constitutional History and Law.

Dicey's Law of the Constitution.
Stubbs, Constitutional History of England.
Hearn, Government of England.
Bagehot, English Constitution.
Franqueville, Gouvernement et Parlement Britanniques.
Gneist, Constitution of England.
Hallam, Constitutional History of England.
May, " " "
Gardiner, " " "

Freeman, Growth of the English Constitution.
Mill, Representative Government.
Anson, Law and Custom of the Constitution.

4. Constitution of Canada and Works relevant thereto.

Todd, Parliament Government in the British Colonies.
Bourinot, Federal Government in Canada.
Doutre, Constitution of Canada.
Cartwright, Cases under the British North America Act.
Lord Durham's Report on British North America.
Lareau, Histoire du Droit Canadien.
Houston's Constitutional Documents of Canada.
Volume O., Statutes of Lower Canada.
Masères' Collection of Quebec Commissions.
Laferrière, Essai sur l'Histoire du Droit Français.
Dilke, Problems of Greater Britain.
Matthews (Jehu), A Colonist on the Colonial Question.
Bryce, American Commonwealth.
Curtis, History of the Constitutional of the United States.
Cooley, Principles of Constitutional Law.

5. Criminal Law, Jurisprudence, and Political Science.

Stephens, History of the Criminal Law.
Blackstone, Vol. IV.
Harris, Principles of Criminal Law.
Pike, History of Crime.
Holland, Elements of Jurisprudence.
Austin, Lectures, omitting chapters on Utilitarianism.
Lorimer's Institutes.
Amos, Science of Law.
Woolsey, Political Ethics.
Lieber, Political Ethics.
Freeman, Comparative Politics.
Aristotle's Politics, by Jowett.

COURSES IN THE FACULTY OF LAW FOR 1899-1900.

Roman Law.

Professor Walton.

During the first part the external history of the law from the early period to the codification of Justinian will be dealt with. The sources of the law will be described, and the gradual evolution explained, by which the law of the city of Rome became fitted to be the law of the civilized world. A brief sketch will be given of the legal institutions of Rome in the first period and of the early constitutional history.

In the doctrinal part of the course matters mainly of antiquarian interest will be touched only slightly. Those portions of the Roman Law which have been followed most closely in the existing law of the Province, e. g. Things, Servitudes, Pignus and Hypothec, Contracts, Obligations, will be treated in detail, and the modifications made by the modern law will be noticed. Class-examinations will be held from time to time, and a first and second prize of books will be given to the two students who obtain the highest marks in these examinations.

Text-book, Moyle's or Sandar's Institutes of Justinian.

Books of Reference.

Muirhead's Historical Introduction to Roman Law.

Muirhead's Institutes of Gaius.

Maynz, Cours de Droit Romain.

Puchta, Institutionem.

Girard, Manuel de Droit Romain.

Maine's Ancient Law.

Constitutional Law.

Professor Walton.

This subject will be divided into two courses of about twenty lectures each.

Part I. will consist of a sketch of the Constitutional Law



of the British Empire. The subject will be considered in the following order: (1) the executive power; (2) the legislative power; (3) the rights and liberties of the subject. Under (1) the power of the sovereign, of the Privy Council, of the great officers of state, and of Parliament, will be discussed. Under (2) the process of legislation in the Imperial Parliament will be explained. Under (3) will fall the right to trial by jury, Habeas Corpus, and the constitutional limitations of the power of the Crown. Afterwards the following topics among others will be dealt with. Liability, Civil and Criminal, of Governors of Colonies, Naval and Military officers, and of Judges for their official conduct.

After treating of the actual law of the constitution, the "conventions of the constitution" will be taken up. Under this head will fall a description of the history and functions of the Cabinet, of the means of adjusting differences between the Sovereign and the two Houses, and between the two Houses themselves, and of the kind of circumstances under which it is usual for ministers to resign. If time permits the course will conclude with a comparison of the British Constitution with the Constitution of the United States.

Part I. will be given to First Year Students. No textbook is prescribed, but students are recommended to refer to Dicey, Law of the Constitution; Anson, Law and Custom of the Constitution; and Bagehot, The English Constitution.

Part II. will consist of a sketch of the Constitutional history of Canada, and of the existing Constitution under the B. N. A. Act.

Legal History and Bibliography.

Professor McGoun.

This course comprises an outline of the history of the law in force in the Province of Quebec.

The main sources from which this law are derived are the Customary Law of France, as modified by the principles of Roman Law as embodied in several of the codes or collec-

tions of Roman Law before the time of Justinian. The Customs of France after being reduced to writing were further modified by the influence of modern Roman Law, which prevailed throughout the larger part of France. The ordinances of the French kings and the commentaries of the great jurists from Cujas and Dumoulin down to Pothier brought the Civil Law of France into the systematic form into which it was introduced into this Province. The custom of Paris, one of the most important of those recognized in France, became formally the basis of the Civil Law in this country, and the ordinance of 1667 was the main authority for procedure.

Since the opening of the British régime the development of Lower Canadian Civil Law has proceeded independently of the Civil Law of France, where the Code Napoléon was passed early in the Century. In Lower Canada a code on the same lines was adopted shortly before the Confederation. Lower Canadian Law has been modified by English law in commercial matters, and also by statutes passed in the Province. Criminal Law, on the other hand, has been derived almost exclusively from the Criminal Law of England.

The leading authorities upon the main branches of the law with the reports of decisions of our courts are brought under the attention of the students in this course.

Law of Corporations and of Joint Stock Companies.

Professor McGoun.

This course is the sequel on the one hand of the course on Agency and Partnership, with which it is closely connected, by reason of the facilities given in the Incorporation of Companies to the undertaking of important enterprises, by a species of partnership or association between individuals upon a larger scale than can be undertaken in a simple partnership. The doctrine of limited liability and the opportunity which it affords for carrying out enterprises of great importance, with combinations of capital derived from a large

number of individuals, is treated of in this course. On the other hand, the growth of Corporatons, both those established by long custom, and those created by Royal Charter, or by Parliamentary or Legislative authority, is also explained, and the relation between these corporations and the ordinary forms of joint stock companies. Corporations sole and Corporations aggregate are defined, and the principles of laws relating to Corporations and Companies explained, and the authors who treat of these principles, and who trace the limits of the powers and authority of such corporations are brought under the notice of the students. In the alternate years, Prof. McGoun will lecture on Agency and Partnership.

Criminal Law.

Professor Mr. Justice Davidson.

This course includes:—

A history of the Criminal Law and Criminal Procedure of England; and of their introduction into and development throughout Canada;

Discussion of the Criminal Code and other Statutes enacting criminal offences; of the rules of evidence in criminal cases, of the Fugitive Offenders' Act; of extradition, and generally of the principal features belonging to the Criminal Law of the Dominion.

Commercial Law.

Professor Macmaster.

The subjects dealt with will include Commercial Sales, Bills and Notes, the law of Carriers and the law of Insurance.

The course on carriers will cover:

1. Carriers: contracts with:
   (a) Affreightment.
   (b) Merchant Shipping.
   (c) Bottomry and Respondentia.

The course on Insurance will cover:

2. Insurance contracts of:
   (a) Marine Insurance.
   (b) Fire Insurance.
   (c) Life Insurance.

Civil Procedure.

Mr. Percy C. Ryan.

The advanced course for the Second and Third Years covers all matters of procedure not dealt with in the First Year Course, and includes Provisional Remedies, such as capias, attachment before judgment, injunction, etc., and special proceedings, such as proceedings relating to corporations and public offices, mandamus, etc., as well as the rules of pleading in the more complicated classes of action. It will be divided into two parts, one of which will be taken in each alternate year.

Civil Procedure.

Mr. Gordon W. Macdougall.

This course to the students of the First Year is intended to form an introduction to the subject, to explain the simpler kinds of actions, the general rules of pleading, and the jurisdiction of the several courts.

The revised Code of Civil Procedure for the Province of Quebec is the text-book.

Marriage Covenants and Minor Contracts.

Professor Fortin.

Two courses.

In the alternate years, Professor Fortin will lecture on Prescription, Lease, and Municipal Law.

Successions.

Professor Mr. Justice Doherty.

The Law of Succession.

The course consists of a commentary and explanation of the whole of Title I., and the third Chapter of Title II. of the Third Book of the Civil Code. The order followed by the Code in dealing with the different matters, coming within the scope of this course, has however been departed from with a view to presenting to the Student the Law governing successions as one whole. The subject will be developed as nearly as possible in the following order:—

1. General notions, definitions and divisions of the subject. The Testamentary Succession. The Ab-Intestate Succession.
2. Rules of Law common to both Successions.
3. Rules peculiar to the Testamentary Succession.
4. Rules peculiar to the Ab-Intestate Succession.
5. Partition of the Succession (and of property held in undivided ownership generally), its incidents and effects. In the alternate year, Prof. Doherty will lecture on Gifts and Substitution.

Obligations.

Mr. Aimé Geoffrion.

This course of lectures will consist of a commentary on the title on obligations in the Civil Code, less the chapter of proof articles 982 to 1,202 inclusive. Our law on the subject will be compared with the old French law and the modern French law; and its general principles will be explained and illustrated.

Real Property Law, Privileges and Hypothecs, Registration, and Notarial Law.

Professor Marler.

Two courses.

Public International Law.

Professor Lafleur.

Sovereignty and equality of Independent States, Recognition of Belligerency and Independence. Justifiable grounds of intervention. Modes of territorial acquisition. Territorial boundaries. Doctrine of Exterritoriality. Treatise and Arbitrations. Laws of War. Neutrality of States and of individuals. Laws of Blockade. Contraband. Confiscation. Prize-Courts and their jurisprudence.

N.B.—The students' attention will be specially directed to Treaties, Diplomatic Relations, and International Arbitrations, in which Canada is directly concerned.

Private International Law.

Professor Lafleur.

Distinction between the *a priori* and positive methods. Sources of the positive law of Quebec on the subjects. Application and illustration of the rules for solving conflicts of law in regard to the different titles of the Civil Code. Comparisons between our jurisprudence and that of England, France, and Germany.

TIME TABLE.

INTRODUCTORY LECTURE, TUESDAY, 5TH SEPT., 4 P.M.

FIRST YEAR STUDENTS, 1899-1900.

WEDNESDAY, 6TH SEPT., TO FRIDAY, 3RD NOV., 9 WEEKS.

HOURS.	MONDAY	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.
8.30	Obligations. Mr. A. Geoffrion	Procedure. Mr. Gordon Macdougall.	Obl.	Procedure.	Obl.
4.00	Roman Law. The Dean.	Rom.	Constitutional Law. The Dean.	Rom.	Rom.
5.00	Legal History. Pro. McGoun.	Persons. Prof. Lafleur.	Hist.	Persons.	Hist.

MONDAY, 6TH NOV., TO FRIDAY, 15TH DEC., 6 WEEKS.

HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.
8.30	Obl.	Procedure.	Obl.	Proced.	Obl.
4.00	Rom.	Rom.	Const.	Rom.	Rom.
5.00	Real Rights. Prof. Marler.	Persons.	Real Rights.	Persons.	Real Rights.

CHRISTMAS.

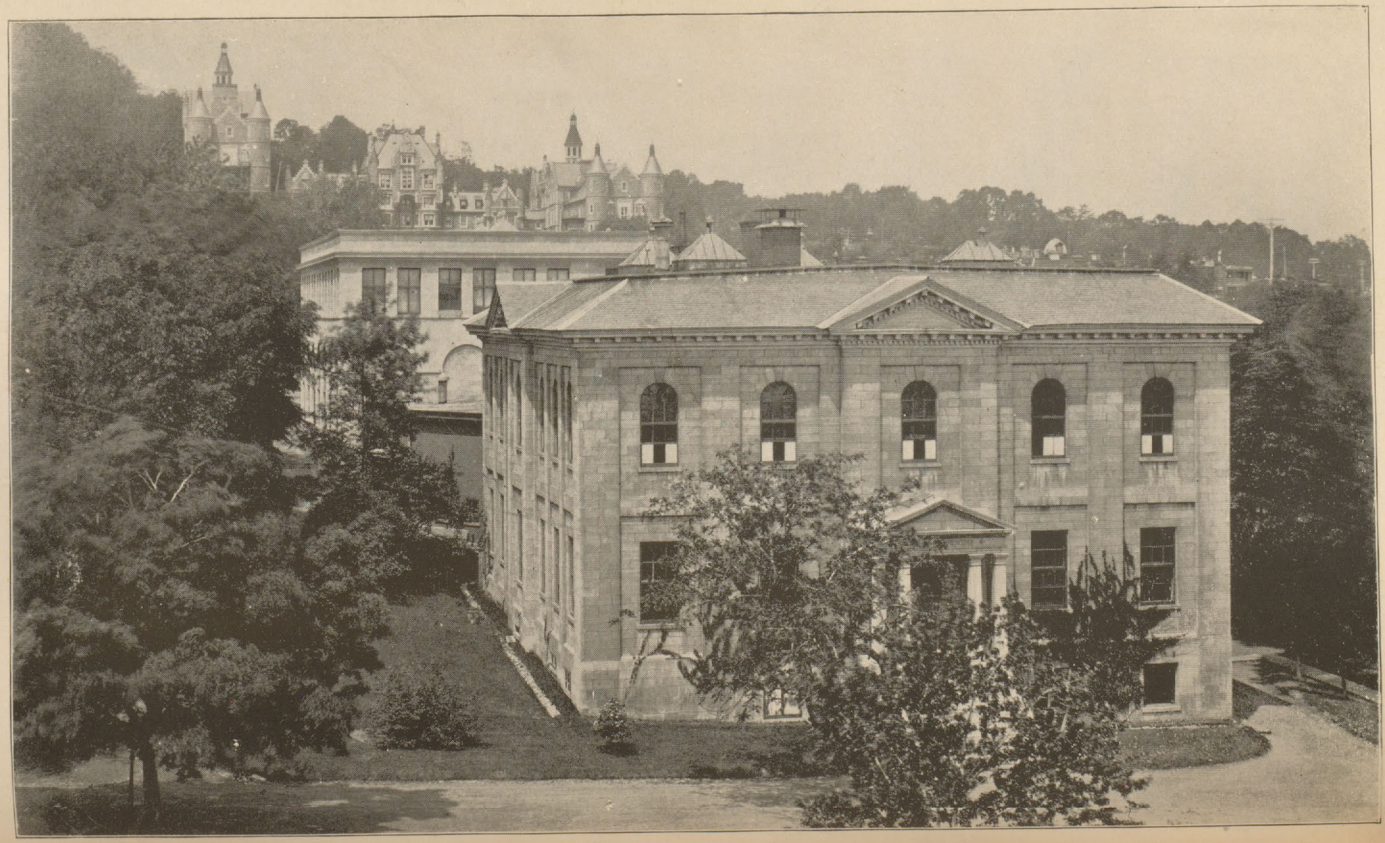
MONDAY, 8TH JAN., TO FRIDAY, 19TH MARCH, 9 WEEKS.

HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.
8.30	Obl.	Constitutional Law. The Dean.	Obl.	Const.	Obl.
4.00	Rom.	Rom.	Rom.	Rom.	Rom.
5.00	R. R. 3 wks.		R. R.		R. R.

MONDAY, 12TH MARCH, TO FRIDAY, 30TH MARCH, 3 WEEKS.

HOURS.	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.
8.30					
4.00	Rom.	Const.	Rom.	Const.	Rom.
5 00	Criminal Law. Prof. Mr. Justice Davidson.	Crim.	Crim.		Crim.

Roman Law	115 lectures.	Obligations	50 lectures.
Legal History	25 "	Criminal	10 "
Persons	25 "	Constitutional	35 "
Real Rights	25 "		
Procedure	25 "	Total	310



Faculty of Medicine.

THE PRINCIPAL (*ex-officio.*)

Professors.

WRIGHT,	STEWART,	ADAMI,
MACCALLUM,	WILKINS,	BIRKETT,
CRAIK,	PENHALLOW,	FINLEY,
GIRDWOOD,	MILLS,	LAFLEUR,
RODDICK,	CAMERON,	ARMSTRONG,
GARDNER,	BLACKADER,	JOHNSTON,
SHEPHERD,	RUTTAN,	BURGESS,
BULLER,	BELL,	MARTIN.

Dean.—R. CRAIK, M.D., LL.D.

Registrar.—R. F. RUTTAN, B.A., M.D., F.R.S.Can.

Librarian.—F. G. FINLEY, B.A., M.D.

Director of Museum.—J. G. ADAMI, M.A., M.D., F.R.S. (EDIN.)

The Sixty-seventh Session of this Faculty will be opened on Thursday, September 21st, 1899, by an introductory lecture by Professor William Osler, at 3 p.m. The regular lectures in all subjects will begin on September 22nd, at the hours specified in the time-tables, and will be continued until May 25th, 1890, when the annual examination will begin.

The Medical School of McGill University was founded in 1822 as the "Montreal Medical Institution," by Drs. W. Robertson, W. Caldwell, A. F. Holmes, J. Stephenson and H. P. Loedel—all of them at the time members of the staff of the Montreal General Hospital.

Although founded in 1822, yet no session of the "Medical Institution" was held until 1824, when it opened with 25 students; in 1844 the number of students in the Faculty was 50; in 1851, 64, with 15 graduates; in 1872-73, 154, with 35 graduates; in 1892-93, 315, with 46 graduates; in 1895-96, 419, with

90 graduates; in 1898-99 the session just completed, 436, with 70 graduates.

There were no sessions held during the political troubles from 1836 to 1839, and it is owing to this fact that the present is the 67th session of the Faculty. This is in reality the seventieth session of the school, which is the direct continuation of the "Montreal Medical Institution."

In 1828 the "Medical Institution" was recognized by the Governors of the Royal Institution as the Medical Faculty of McGill University. At this time the lectures were given in a building on the site of the present Bank of Montreal. Later the school was removed to a brick building, still standing near the corner of Craig and St. George streets.

In 1846 the lectures of the Faculty were given in the present central building of the University now occupied by the Faculty of Arts. On account of the inconvenience arising from the distance of the University buildings from the centre of the city, it was decided in 1850, to erect a Medical school building on Cote Street, provided with ample accommodation for Library and Museum, and furnished with a large dissecting room and two lecture rooms; this building was occupied for the first time during the session 1851-52, and sufficed for the wants of the Faculty until 1872-73, when the present main building was provided by the Governors of the University.

In 1885 the building in the University grounds, erected by the Governors for the use of this Faculty, was found inadequate. A new building was then added, which at the time afforded ample facilities for carrying out the great aim of the Faculty,—that of making the teaching of the primary branches thoroughly practical.

Owing to the larger classes and the necessity of thorough laboratory teaching, the Lecture Rooms and Laboratories added in 1885 soon became insufficient in size and equipment to meet the requirements of the Faculty.

The late Mr. John H. R. Molson with timely generosity came to the aid of the Faculty, and in 1893 purchased property adjoining the college grounds, and enabled the Faculty to erect

new buildings and extensively alter and improve those already in use.

These buildings were completed and officially opened by His Excellency, the Earl of Aberdeen, visitor of the University, January 8th, 1895.

The new buildings have been erected as an extension of the old ones, towards the northwest, partially facing Carlton road, and convenient to the Royal Victoria Hospital. They connect the Pathological building acquired in 1893 with the older buildings, and comprise a large modern lecture room, capable of accommodating 450 students, with adjoining preparation-rooms and new suites of laboratories for Pathology, Physiology, Histology, Pharmacology and Sanitary Science. The laboratories, etc., in the older buildings, have been greatly enlarged and improved; the whole of the second floor has been devoted to the department of anatomy, and consists of dissecting-room, anatomical museum and bone-room, preparation rooms, Professors' and Demonstrators' rooms, and a special Lecture Room.

On the ground floor the Library and Museum have been greatly enlarged; a room forming part of the Library has been furnished as a reading room for the use of students, where the extensive reference library of the Faculty may be consulted.

On this floor are situated also the Faculty room, the Registrar's office, the special museum for Obstetrics and Gynæcology, together with Professors' rooms, etc. The chemical laboratories have been increased by including the laboratories formerly used by the department of Physiology.

In the basement are placed the janitor's apartments, cloak rooms with numerous lockers for use of students, the Lavatory, etc., recently furnished with the most modern sanitary fittings.

Lecture Rooms.

In the buildings now occupied by the Faculty, as will be seen by reference to the diagrams, in addition to the laboratories, dissecting room, etc., there are three large lecture

rooms, two capable of comfortably seating about 300 students, and one for general lectures, sessional examinations, etc., capable of seating 450 students. These theatres are well ventilated and lighted by electricity, as indeed is the entire building. The seats are numbered, and a lecture room ticket securing a seat for the session is given each student on enregistering and paying the sessional fee.

Rooms for Students Use.

Three cloak rooms are provided in convenient portions of the building, and, in addition, commodious lockers can be procured at a nominal rental. A large well-lighted reading-room containing newspapers, magazines and the current medical journals is provided in the new block, and is managed by the students themselves. The original library has been refitted as a reading-room for students desiring to avail themselves of the reference works in the library of the Faculty.

Dissecting Room.

The Dissecting Room, which is situated on the second floor, is L-shaped, one arm of which is 76 feet in length and 31 feet in breadth and the other arm 45 by 32. It is supplied with thirty dissecting tables and over 200 specially constructed lockers, and is well lighted for work during the day and night.

In connection with the dissecting-room there is a Bone room and Anatomical Museum where students have an excellent opportunity of studying osteology, frozen sections, anatomical models and dry preparations. In connection with the bone room is a small but well arranged museum of comparative osteology. There are also rooms for the demonstrators of anatomy.

Physiological Laboratories.

The Physiological Laboratories, which are situated on the upper floor of the new building, are supplied with the most modern apparatus for the practical teaching of this rapidly growing and important branch of the medical curriculum.

They consist of one large room forty-five by thirty-five feet for undergraduate work, and two smaller ones for more advanced work and private research. In addition there is a room set apart for a consulting library and for the special use of the Professor of this department. The Students' laboratory is arranged in such a way as to permit of students assisting at and taking part in the more elaborate demonstrations, as well as undertaking experiments independently for themselves.

A recent grant from the Faculty, which was supplemented from private sources, has allowed of the partial equipment of an additional branch of the subject which it is the intention to extend, as well as to augment the resources of other departments of practical physiology in the immediate future.

Histological Laboratories.

The Histological Laboratory proper is a large, well-lighted room on the second floor of the new building. It is so arranged that over eighty students can be present at the microscopical demonstrations. It is supplied with 50 microscopes. Students are given special facilities for studying and making themselves thoroughly acquainted with the specimens that are the subjects of demonstration. In addition to the students' laboratory there is a smaller laboratory adjoining for the use of the professor and demonstrators and for special work.

Pharmacological Laboratory.

The Pharmacological Laboratory is a large room 45 by 35 feet, situated on the second floor of the new building, and is now furnished with the necessary appliances for the practical teaching of pharmacology. In this room is placed a teaching museum of drugs and pharmaceutical preparations arranged according to their physiological action; and tables arranged for teaching dispensing and the preparation of medicines.

Chemical Laboratory.

The Chemical Laboratory is large, lofty, and lighted from three sides. It can accommodate 124 men, but only a much smaller number is allowed to work at one time. Each stu-

dent, when entering on this course, has a numbered table in the laboratory assigned to him for his use during the session. Each table has its own gas and water fixtures, and is provided with shelves for its corresponding set of reagent-bottles, as well as a drawer and locker containing set of chemical apparatus especially adapted for the work. This apparatus is provided by the Faculty, and supplied to each student without extra charge. The student is only required to pay for apparatus broken or destroyed.

The laboratory is ventilated by an electric fan, and fully equipped for the various courses of study, giving the student unsurpassed advantages for acquiring a sound and practical knowledge of medical chemistry.

Pathological Laboratories.

A building of three stories, 47 by 40 feet, adjoining the College, recently acquired by the Faculty, thanks to the generosity of the late Mr. J. H. R. Molson, constitutes the Pathological Laboratory; it has undergone extensive alterations to fit it for the purpose. The uppermost floor has been converted into a work-room for the osteologist and curator; the second floor is one large laboratory for classwork in Practical Pathology and Bacteriology; upon the floor beneath are two laboratories for research, a preparation room, professor's private room and library, and culture rooms; while upon the ground floor are rooms for the attendant, for storage and for keeping animals.

Endowments.

The first endowments of the Faculty were the "Leanchoil" and "Campbell Memorial" funds. The former was a gift of Lord Strathcona; the latter subscribed by the citizens of Montreal and graduates of Medicine of the University. A portion of these funds was expended in increasing the laboratory and lecture room accommodation in 1885, the interest on the balance being applied to general maintenance.

In 1893 Lord Strathcona endowed the Chairs of Pathology

and Public Health with $100,000. This gift enabled the Faculty to equip and develop these departments until they are quite up to the requirements of modern medical science.

Various other endowments, such as the Drake Endowment of Physiology and the bequests of the late Mrs. Mary Dow, Mrs. John MacDougall and Miss Jane Learmont, have enabled the Faculty to maintain a high standard of laboratory teaching without proportionately increasing the cost of the course to the student.

This year the Faculty has great pleasure in announcing that Lord Strathcona has again come to its aid. He has promised in the names of Lady Strathcona and the Honorable Mrs. Howard one hundred thousand dollars, to be used partially to meet the cost of extending the Laboratories, Library and Museum, and partially as a fund, the interest on which is to be applied to replace the loss of the graduation fees, formerly used to support the Medical Library and Museum, but which are now required by the Governors for general university expenses outside the Faculty of Medicine.

The thanks of the Faculty are also due to Mr. David Morrice, who has recently come forward with a donation of upwards of three thousand dollars to meet the cost of increasing the equipment of the Laboratory of Pharmacology.

I.

MATRICULATION.

I. Regulations of the Faculty of Medicine of McGill University.

Every student before he can be enregistered as an undergraduate in Medicine, must present a certificate of having passed the Matriculation Examination of the Faculty of Medicine or Arts of this University, or of having passed some State or University examination accepted by this University.

Graduates in Arts of any recognized university and those who have passed the Entrance Examination of a Provincial Medical Council and thus become enregistered students in medicine of a province in Canada, are exempt from further preliminary examination.

Students from the United States who have passed a State or University examination fully equivalent to that required by this University may at the discretion of the Faculty be admitted to study without further examination.

The Matriculation Examination of this University for Medicine is held twice each year, in June and September, at the same time as that for Arts and Science. The fee for this examination is five dollars, payable on application to the Secretary of the University, W. Vaughan.

Papers for the spring examinations will be sent to local centres on application to the Acting Secretary. An additional fee of four dollars, to meet local expenses, will be charged for such examination.

The September examinations are held just before the lectures in Medicine begin. These are held in McGill College, Montreal, only, and at these examinations alternative books in Classics will be accepted.

The subjects for examination are Classics, Mathematics and English, and one of the optional subjects as below.

Examinations begin on June 12th, 1899, in McGill College and local centres; and on September 14th, 1899, in McGill College only.

COMPULSORY SUBJECTS.

Latin.—Cæsar, Bell. Gall. Books I. and II.; Virgil, Aeneid, Book I., and Latin Grammar.

In both Greek (when taken as an optional subject) and Latin, translation at sight and prose composition (sentences or easy narrative, based upon the prescribed prose text) will be required.

At the September examination, other works in Greek or Latin equivalent to those specified may be accepted if application be made to the Secretary of the Examining board at least a fortnight before the day of examination.

Mathematics.—*Arithmetic*, Elementary rules, Vulgar and Decimal Fractions, Proportion, Percentage, Simple Interest, etc., Square Root and a knowledge of the Metric System. *Algebra.* Elementary rules, Fractions, Factors, Equation of the First Degree, Indices, Surds and easy Quadratics; Problems leading to equations. *Geometry.* Euclid's Elements, Books I., II., III., with easy deductions.

English.—Writing from Dictation. *Grammar.*—A paper on English grammar, including Analysis. The candidate will be expected to show a good knowledge of Accidence, as treated in any grammar prepared for the higher forms of schools. A similar statement applies to grammatical Analysis. Candidates are required to state the class to which any subordinate sentence belongs and to arrange and define the various members of all sentences set. Failure in Analysis and Parsing will cause the rejection of the paper. West's Elements of English Grammar is recommended as a text-book, and attention is particularly directed to pages 197-216. *English History.*—Candidates will be required to give the chief details of leading events. While any text-book written for the upper forms of schools may be used in preparation for the examination.

Gardiner's Outline of English History (Longmans) is recommended. *Composition.*—Candidates will write a short essay on a subject given at the time of the examination. *Literature.*—Scott's Lady of the Lake, ed. Stuart (Macmillan). Shakspere's Richard II., ed. Deighton (Macmillan), or Wordsworth (Arnold's Selections as specified in Junior Matriculation English [1899] of the University of Toronto).

OPTIONAL SUBJECTS.

(One only of these subjects is required.)

1. *French.*—Grammar up to the beginning of Syntax. An easy translation from French into English, and from English into French; Dictation or similar exercise. Candidates are expected to be able to write French without gross mistakes in spelling or grammar; special credit will be given for evidence of familiarity with the spoken language.

Physics.—Properties of Matter; Elementary Mechanics of Solids and Fluids, including the Laws of Motion, Simple Machines, Work, Energy; Fluid Pressure and Specific Gravity; Thermometry, the effects and modes of transmission of Heat. (See, for instance, Gage's Introduction to Physical Science, ch. I-V.)

German.—The whole of Joynes' German Reader and Baumbach's Schwiegersohn (Heath & Co.), (or texts approximately equal in amount), together with a thorough knowledge of German accidence. Candidates must also be able to translate into German with tolerable correctness exercises approximately equal in difficulty to those contained in the first part of Vandersmissen's High School German Grammar or in the First and Second Parts of the Joynes-Meissner German Grammar (Heath & Co.).

Candidates who fail in one or more subjects at the June examination, or who have taken part only of the examination

and present themselves again in the following September, will be exempted from examination in those subjects only in which the Examiners may have reported them as specially qualified.

Ontario Candidates.— At the June examination, as well as the September one, candidates from Ontario may present an equivalent amount from the books prescribed for the Junior Matriculation Examination of the University of Toronto.

The Junior Leaving Examination accepted by the Universities of Ontario is acepted by the Faculty of Arts for those who purpose taking the double course of Arts and Medicine, in so far as the subjects of their programme satisfy the Examiners of the Faculty, *i.e.*, when the subjects taken are the same as, or equivalent to, those required in McGill University.

A. *Matriculation Examination for those who wish to obtain a license to practice in England, India, or any other British Possession (Canada excepted).*

The Matriculation Examination in Medicine of this University, as described above, is accepted by the General Medical Council of Great Britain and Ireland. Graduates of this University desiring to enregister in England are thus exempted from any examination in preliminary education on production of the McGill Matriculation certificate, together with a certificate that all the subjects of this Examination were passed at one time. Certificates of this University for attendance on lectures are also accepted by the General Medical Council.

B. *Matriculation Examination for those who wish to obtain a license to practice in the Province of Quebec.*

No University Matriculation Examination is accepted by the College of Physicians and Surgeons of this Province. Graduates in Arts of any British or Canadian University are however exempted from examination on presentation of their Diplomas.

Those who pass the Preliminary Examination described below, or Graduates in Arts who enregister as students in the C. P. & S., Quebec, *on beginning their studies in Medicine,* obtain on graduating from McGill University a license to Practice in Quebec without further examination in any professional subject.

The requirements for this examination:

LATIN.—Cæsar's Commentaries, Bks. I., II., III., IV. and V.—Virgil's Aeneid, Bks. I. and II.—The Odes of Horace, Bk. I., with a sound knowledge of the Grammar of the Language.

ENGLISH.—For *English-speaking* candidates.—A critical knowledge of one of Shakspere's plays, viz., Twelfth Night, for 1898, with English Grammar, as in Dr. Smith or Mason.

For *French-speaking* candidates.—Translation into French of passages from the first eight Books of Washington Irving's Life of Columbus, with questions of Grammar. Translation into English of extracts from Fénélon's Télémaque.

FRENCH.—For *French-speaking* candidates.—A critical knowledge of Molière's Le Bourgeois Gentilhomme, Fénélon's Aventures de Télémaque and La Fontaine's Fables, Bks. I., II., III., with questions of Grammar and Analysis.

For *English-speaking* candidates.—Translation into English of passages from Fénélon's Télémaque, with questions of Grammar. Translations into French of easy English extracts.

BELLES LETTRES AND RHETORIC.—Principles of the subject as in Haven's Rhetoric, or Boyd's Rhetoric and Literary Criticism. History of the Literature of the age of Pericles in Greece, of Augustus in Rome, and of the 17th and 18th centuries of England and France.

HISTORY.—Outlines of the History of Greece and Rome, and particular knowledge of the History of Britain, France and Canada.

GEOGRAPHY.—A general view, with particular knowledge of Britain, France and North America.

ARITHMETIC.—Must include Vulgar and Decimal Fractions, Simple and Compound Proportion, Interest and Percentages, and Square Root.

ALGEBRA.—Must include Fractions and Simultaneous Equations of the First Degree.

GEOMETRY.—Euclid, Bks. I., II., III. and VI., or the portion of Plane Geometry covered by those Books. Also the measurement of the lines, surfaces and volumes of regular geometrical figures.

CHEMISTRY.—Outlines of the subject as in Remsen's Elements of Chemistry.

BOTANY.—Outlines as in Gray's "How Plants Grow."

PHYSICS.—Outlines as in Peck-Ganot's Physics.

PHILOSOPHY.—Elements of Logic as in Jevon's Logic; Elements of Philosophy, as in Professor Murray's Hand-Book.

The Examinations will be held in September, 1899, at Quebec, and in June, 1900, at Montreal. Applications to be made to Dr. A. T. Brosseau, Montreal, or Dr. Belleau, Quebec, either of whom will furnish schedule giving text books and percentage of marks required to pass in each subject.

Examination Fee, twenty dollars. Should the candidate be unsuccessful, one half of the fee will be returned.

Of the four years' study *after* having passed the Matriculation Examination, three six months' sessions, at least, must be attended at a University, College or Incorporated School of Medicine recognized by the "Provincial Medical Board." The first session must be attended during the year immediately succeeding the Matriculation Examination, and the final session must be in the fourth year.

C. *To obtain a license to Practice in Ontario.*

Every one desirous of being registered as a matriculated medical student in the register of the College of Physicians and Surgeons of this Province, except as hereinafter provided, must present to the Registrar the official certificate of having passed the "Departmental Pass Arts Matriculation Examination," and in addition Physics and Chemistry—whereupon he shall be entitled to be so registered upon the payment of twenty dollars and giving proof of his identity.

Graduates in Arts, in any University in Her Majesty's dominions, are not required to pass this examination, but may register their names with the Registrar of the College, upon giving satisfactory evidence of their qualifications, and upon paying the fee of twenty dollars.

A certificate from the Registrar of any chartered University conducting a full Arts course in Canada, that the holder thereof matriculated prior to his enrolment in such University, and passed the examination in Arts prescribed for students at the end of the first year, shall entitle such student to registration as medical student under *The Ontario Medical Act.*

Every medical student, after matriculating, shall be registered in the manner prescribed by the Council, and this shall be held to be the beginning of his medical studies, which shall date from that registration.

Full details may be obtained by application to Dr. R. A. Pyne, Registrar, Cor. Bay and Richmond Sts., Toronto.

D. *To Practice in the Maritime Provinces.*

The examination required by the Faculty of Medicine of this University is accepted in the provinces of Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland, subject to the following conditions:

The Nova Scotia Medical Board requires that 60 per cent. of the required marks be taken, and that Physics be taken as the optional subject.

The New Brunswick Medical Board accepts the McGill Matriculation, as it is the same as that required for entrance to the Faculty of Arts.

The Prince Edward Island Medical Board has requirements identical with those of New Brunswick.

The Newfoundland Medical Board accepts the McGill Matriculation, as it is identical with the Arts Matriculation, but requires Physics in addition.

Students desiring ultimately to practice in any of these provinces should, when enregistered in the Faculty of Medicine, notify the Registrar of that province of the fact and have their matriculation enregistered.

The Registrars are: for Nova Scotia, Dr. A. H. W. Lindsay, Halifax; for Newfoundland, Dr. J. Sinclair Tait, St John's; and for New Brunswick, Dr. G. H. Coburn, Fredericton, who will furnish all details of requirements, etc.

Special matriculation examinations are held annually in New Brunswick and Nova Scotia, at dates stated in the Almanac in the Calendar of the Faculty of Medicine.

These examinations, as stated above, are accepted by this University as equivalent to its Matriculation Examination.

E. *To obtain license to Practice in Manitoba.*

An examination accepted by the University of Manitoba as equivalent to their matriculation is required on entrance, and to obtain License an examination in Professional subjects is required. Dr. J. S. Gray, of Winnipeg, Manitoba, is the Provincial Registrar.

F. *To obtain license to Practice in North-West Territories.*

No special matriculation standard is specified. Licensed practitioners of any of the other provinces are admitted to practice without examination.

Those not licensed to practice elsewhere in Canada are examined in professional subjects only. Dr. H. W. Bain, of Prince Albert, is Registrar of the Province.

G. *To Practice in British Columbia.*

No special standard of matriculation is specified.

All desiring a license must be graduates of some recognized medical school, and pass an examination in professional subjects only. Dr. C. J. Fagan, of New Westminster, is the Provincial Registrar.

II.

ENREGISTRATION.

The following are the University Regulations:—

All Students desirous of attending the Medical Lectures shall, at the commencement of each Session, enrol their names and residences in the Register of the Medical Faculty.

The said Register shall be closed on the 21st of October next, for the Session of 1899-1900.

Fees are payable to the Registrar, and must be paid in advance at the time of enregistration.

The class tickets for the various courses are accepted as qualifying candidates for examination before the various Colleges and Licensing bodies of Great Britain and Ireland and the College of Physicians and Surgeons of Ontario. The degree in Medicine of this University carries with it at the Licensing Boards of Great Britain the same exemptions in certain subjects as are granted to all colonial degrees.

To meet the circumstances of the General Practitioners in British North America, where there is no division of the profession into Physicians and Surgeons exclusively, the degree awarded upon graduation is that of "Doctor of Medicine and Master of Surgery" in accordance with the general nature and character of the curriculum, as fully specified hereafter. The degree is received by the College of Physicians and Surgeons of the Province of Quebec, provided the graduate from this university matriculated before the College of Physicians and Surgeons of Quebec when entering on the study of medicine. Any graduate therefore in medicine of this University may obtain a license to practice in the Province of Quebec without further examination if he has complied with the above regulations.

TIME TABLE FOR SESSION 1898-99.

Time Tables for the Session of 1899-00 will be issued to each student with his Lecture Room ticket on enregistration.

TIME TABLE OF FIRST YEAR LECTURES.

LECTURES.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Lecture Theatre.
Anatomy	9	9	9	9	9	....	Autumn & Winter Terms-No. I.
Physiology	4	4	.....	4	.....	.....	No. I.
Chemistry	.....	3	.....	3	3	....	Autumn Term No. III.
	.....	.....	2	.....	2	....	Winter and Spring Terms—No. III
Zoology	.....	11	.....	11	.....	10	Autumn & Winter Terms.
Botany	.....	4	.....	4	.....	.....	Autumn Term.
LABORATORY WORK.							
Practical Anatomy	10–12½	10–12½	10–12½	10–12½	10–12½	9–12½	
*Prac. Physiology	.....	....	3–5	.....	.....	.....	
*Prac. Histology	2–4	.....	.....	.....	4–6	10–12	
*Prac. Chemistry	9–11	9–11	9–11	9–11	.....	.....	Autumn Term.
*Prac. Biology	3–5	.....	3–5	.....	.....	.....	Autumn Term.

*Class taken in division.

TIME TABLE OF SECOND YEAR LECTURES.

LECTURES.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Lecture Theatre.
Anatomy	9	9	9	9	9	....	Autumn & Winter Terms -No. I.
Physiology	2	.....	2	.....	2	.....	No. I.
Chemistry	3	.....	3	.....	3	.....	
Pharmacology and Therapeutics	4	.....	4	.....	4	.....	No. I.
LABORATORY WORK.							
Anatomy	10	10	10	10	10	10	
	12.30	12.30	12.30	12.30	12.30	12.30	Autumn & Winter Terms.
†Prac. Chemistry	9–11	9–11	9–11	9–11	9–11	9–11	Spring Terms
†Prac. Physiology	.....	2–4	.....	2–4	.....	.....	

†Half the class only.

NOTE—Students of the second year when not engaged in the laboratories are required to attend the Out Patients' Clinics (only) of M. G. H. or R. V. H. (11 a.m. to 1 p.m.); attendance to average two hours per week. Certificates required for graduation.

TIME TABLE OF THIRD YEAR LECTURES.

LECTURES.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Lecture Theatre.
Gynæcology and Obstetrics	9	..	.....	9	.....	.....	II
Medicine	.....	10	*11-12	10	.....	.....	III
Surgery	10	.....	*12-1	.....	10	.....	III
Jurisprudence and Mental Diseases	11	.....	.....	11	.....	.....	II
Pharmacology and Therapeutics	.....	11	....	.....	11	.....	III
Gen. Pathology and Bacteriology	5	.....	9	.....	.....	.....	III
Hygiene	.....	9	.....	....	9	.....	III
Morbid Anatomy	.....	.....	.....	.....	.....	*9-11	
Clinical Medicine	.....	1 p.m. MGH	..	2 p.m RVH	.....	.....	
Clinical Surgery	2 p.m. RVH	.....	.....	.....	1 p.m. MGA	.....	
Practical Pathology	.....	4-6	4-6	4-6	4-6	.....	Path. Lab. Winter.
‡Clinical and Sanitary Chemistry	.....	4-6	4-6	4-6	4-6	.....	Chem. Lab. Autumn
‡Bacteriology and Hygiene	.....	4-6	4-6	4-6	4-6	.....	Path. Lab. Autumn
††Clinical Microscopy	.....	4-6	4-6	4-9	4-6	.....	Path. Lab. Spring
‡†Operative Surgery	.....	4-6	4-6	4-6	4-6	.....	Anat. Lab. Spring

*Alternate weeks M.G.H. and R.V.H. †Optional. ‡Classes taken in groups.

TIME TABLE OF FOURTH YEAR LECTURES.

LECTURES.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Lecture Theatre.
Gynæcology	.....	9	.....	.....	.....	.....	II
Obstetrics	.....	.....	9	.....	11	.....	II
Medicine	.....	10	†11-12	10	.....	.....	III
Surgery	10	.....	‡12-1	.....	10	.....	III
Med. & Surg. Pathology	...	.....	.....	9	.....	.....	III
Ophthalmology	9	...	.....	.....	.....	.....	II
*Out Patients' Clinics	11-12 12-1	11-12 12-1	11-12 12-1	11-12 12-1	11-12 12 1	11-12	R.V.H. M.G.H.
Clinical Medicine	 1	.....	.....	.....	2	.....	R.V.H. M.G.H.
Clinical Surgery	.....	1	.....	.....	.....	.....	M.G.H. R.V.H.
Gynæcological Operations	.....	11	.....	.....	.....	.....	R.V.H.
*Clinical Ophthalmology	4	 4	4	.....	4	.....	M.G.H. R.V.H.
†Gynæcological Clinics	 11	4	.....	4 4	.....	.....	M.G.H. R.V.H.
Morbid Anatomy	.....	.....	.....	.....	.....	‡9-11	
Clinical Obstetrics	.....	.....	.....	.....	.....	1-2.30	Maternity Hosp.
*Dermatological Clinic	.....	.....	2	....	.....	.....	M.G.H.
Genito-Urinary Clinic	.....	.....	.....	.....	.....	3	R.V.H.
*Diseases of Children Clinic	.....	4	.....	.....	4	.....	M.G.H.
*Laryngology	4	.....	.....		4	....	M.G.H.
Medical and Surgical Anatomy	5	.....	.....	.....	....	.....	Autumn term.
Children's Diseases	5	.....	.....	.....	....	.....	Winter term.

*In groups of eight or ten. †In groups of four. ‡Alternate weeks M.G.H. and R.V.H.

III.

COURSES OF LECTURES.

The Corporation of the University, on the recommendation of the Faculty of Medicine, in 1894, consented to the extension of the courses of lectures in medicine over a period of about nine months instead of six.

By this means, (1) The students of the primary years have a more ample opportunity of becoming acquainted, by laboratory work, with those branches of study which form the scientific basis of their profession, and (2) the final students will be able to derive the greatest benefit from the abundance of clinical material provided in the two Hospitals.

By this arrangement, while the actual number of didactic lectures per session will be decreased, there will be a corresponding increase in the amount of tutorial work and individual teaching in the laboratories for Chemistry, Physiology, Anatomy, Pathology and Hygiene as well as giving more time, during the last two years of the course, for the thorough study of disease in the wards of the Royal Victoria and Montreal General Hospitals.

The Faculty expects, by thus increasing the time that the different professors, lecturers and demonstrators devote to each student, to accomplish two very important ends: First, to do away with the injurious effects which result from attempting to condense the teaching of medicine and surgery into four or even five sessions of six months; Second, to give each student a sounder and more thoroughly practical knowledge of his profession than could be obtained by attending during even five sessions of six months each.

ANATOMY.

PROFESSOR, FRANCIS J. SHEPHERD.

LECTURERS, { *J. M. ELDER.* / *J. A. SPRINGLE.*

SENIOR DEMONSTRATOR, J. G. McCARTHY.

DEMONSTRATORS,
- *R. TAIT MACKENZIE.*
- *J. A. HENDERSON.*
- *J. J. ROSS.*
- *A. E. ORR.*

ASSISTANT DEMONSTRATORS,
- *A. T. BAZIN.*
- *H. M. CHURCH.*
- *W. G. REILLY.*
- *R. A. WESTLEY.*

Anatomy is taught in the most practical manner possible, and its relation to Medicine and Surgery fully considered. The lectures are illustrated by the fresh subject, moist and dry preparations, sections, models and plates, and drawings on the blackboard.

A course of practical demonstrations in Medical, Surgical and Topographical Anatomy is also given in the final year of the course.

The department of *Practical Anatomy* is under the direct control and personal supervision of the Professor of Anatomy, assisted by his staff of Demonstrators.

The methods of teaching are similar to those of the best European schools, and Students are thoroughly grounded in this branch.

Every Student must be examined *at least* three times on each part dissected, and no certificate is given unless the examinations are satisfactory.

Special Demonstrations on the Brain, Thorax, Abdomen, Bones, etc., are frequently given. Prizes are awarded at the end of the Session for the best examination on the fresh subject.

The Dissecting Room is open from 8 a.m. to 6 p.m. Abundance of material can be obtained, owing to the Anatomy Act of the Province of Quebec.

CHEMISTRY.

PROFESSOR, GILBERT P. GIRDWOOD.

The course in this subject is carefully graded. Students of the first year receive lectures on Chemical and Physiological Physics and the general principles and theories of the science. In the second year the course on chemistry is extended to embrace its application to physiology and medicine, and includes a course in Organic Chemistry. The lectures are fully illustrated by experiments, for which the department is equipped with all modern Lecture-room apparatus.

PRACTICAL CHEMISTRY.

PROFESSOR, R. F. RUTTAN.
DEMONSTRATOR, C. G. L. WOLF.
LABORATORY ASSISTANT, CHARLES STEVENSON.

Laboratory instruction in practical chemistry is given during each of the first three years of study throughout one term. The first year's course illustrates the general principles of chemical action and the properties of typical elements. During the second year the course will include methods of qualitative analysis and the detection of poisons. In the third year a course of clinical and sanitary chemistry is given, in which the student is made familiar with the application of chemistry to the diagnosis and prevention of disease. Special attention is directed to instructing the student in making accurate notes of his experiments and his conclusions. These notes are examined daily and criticised.

PHYSIOLOGY.

The JOSEPH MORLEY DRAKE, PROFESSOR.—WESLEY MILLS.
LECTURER, W. S. MORROW.
DEMONSTRATORS, J. W. SCANE and A. A. ROBERTSON.

The purpose of this Course is to make Students thoroughly acquainted, as far as time permits, with modern Physiology; its methods, its deductions, and the basis on which the latter rest. Accordingly a full course of lectures is given, in which

the physical, the chemical and other aspects of the subject receive attention.

In addition to the use of diagrams, plates, models, etc., every department of the subject is experimentally illustrated. The experiments are mostly free from elaborate *technique*, and many of them are of a kind susceptible of ready imitation by the Student.

Laboratory work for Senior Students:—

(1.) During a part of the Session there will be a course on Physiological Chemistry, in which the Student will, under direction, investigate food stuffs, digestive action, blood, and the more important secretions and excretions including urine. All the apparatus and material for this course will be provided.

(2.) The remainder of the Session will be devoted to the performance of experiments which are unsuitable for demonstration to a large class in the lecture room, or that require the use of elaborate methods, apparatus, etc., together with such as each individual of the class can himself conduct.

Laboratory work for Junior Students:—

This will be somewhat similar to the course for senior students, but simpler and anatomico-physiological rather than chemical; like the work for second year students, its main object will be the illustration of important physiological principles.

HISTOLOGY.

PROFESSOR, GEO. WILKINS.
DEMONSTRATOR, N. D. GUNN.

The teaching of Histology and Microscopical methods is spread over two years.

During the latter half of the first year a course of demonstrations is given upon elementary Histology and systematic Histology up to and including the digestive system. During the second year fifteen or twenty demonstrations will be given upon the whole of Histology. The practical instruction

upon the preparation and mounting of specimens is given during the first year. Examinations both practical and written will be held at the end of both first and second years.

PHARMACOLOGY AND THERAPEUTICS.

PROFESSOR, A. D. BLACKADER.
DEMONSTRATOR, R. A. KERRY.

The lectures on this subject are graded in the following manner:

During the primary course attention is directed chiefly to Pharmacology, including the important chemical and physical properties of the various drugs, and a brief consideration of their physiological action; therapeutics is considered only in outline. A complete museum of Materia Medica affords the student opportunity for making himself acquainted with the drugs themselves. During the session a course of demonstrations on Practical Materia Medica and Pharmacy is given.

During the final course the physiological action of drugs is dwelt upon at length, and attention is given to the therapeutic application of all drugs and remedial measures. Prescription writing and the various modes of administering drugs are explained and illustrated. During the course a series of lectures will be delivered in the theatres of the hospitals on special cases or groups of cases, illustrating important points in both general and special Therapeutics.

MEDICINE.

PROFESSOR, JAMES STEWART.

ASSISTANT PROFESSORS, { *F. G. FINLEY* / *H. A. LAFLEUR.* / *C. F. MARTIN.*

LECTURERS, { *G. GORDON CAMPBELL.* / *W. F. HAMILTON.*

DEMONSTRATOR, S. RIDLEY MACKENZIE.

While the lectures on this subject are mainly devoted to Special Pathology and Therapeutics, no opportunity is lost of illustrating and explaining the general laws of disease.

With the exception of certain affections seldom or never observed in this country, all the important internal diseases of the body, except those peculiar to women and children, are discussed, and their Pathological Anatomy illustrated by the large collection of morbid preparations in the University Museum, and by fresh specimens contributed by the Professor of Pathology.

The College possesses an extensive series of Anatomical plates and models illustrative of the Histological and Anatomical appearances of disease, and the wards of the General and Royal Victoria Hospitals afford the lecturer ample opportunities to refer to living examples of very many of the maladies he describes, and to demonstrate the results of treatment.

CLINICAL MEDICINE.

PROFESSOR, JAMES STEWART.
ASSOCIATE PROFESSORS, F. G. FINLEY and H. A. LAFLEUR.
ASSISTANT PROFESSOR, C. F. MARTIN.

The instruction in Clinical Medicine is conducted in the theatres, wards, out-patient rooms and laboratories of the Royal Victoria and Montreal General Hospitals.

The courses include:—

I. The reporting of cases by every member of the Graduating Class, a certain number of beds being assigned to each student.

II. Bedside instruction for members of the Graduating Class.

III. Two Clinics weekly in each hospital.

IV. Tutorial instruction for the Junior Classes, in the wards and out-patient rooms of both hospitals.

V. Instruction in Clinical Chemistry and Bacteriology.

SURGERY.

PROFESSOR, THOMAS G. RODDICK.
LECTURER, A. E. GARROW.

This course consists of the Principles and Practice of Surgery and Surgical Pathology, illustrated by a large collection of preparations from the Museum, as well as by specimens

obtained from cases under observation at the Hospitals. The greater part of the course however is devoted to the Practice of Surgery, in which attention is constantly drawn to cases which have been observed by the class during the session. The various surgical appliances are exhibited, and their uses and application explained. Surgical Anatomy and Operative Surgery form special departments of this course.

CLINICAL SURGERY.

PROFESSOR, JAMES BELL.
ASSOCIATE PROFESSOR, GEORGE E. ARMSTRONG.
LECTURER, A. E. GARROW.

DEMONSTRATORS, { *KENNETH CAMERON.*, *J. M. ELDER.*, *J. ALEX. HUTCHISON.*

The teaching in Clinical Surgery is conducted at the Montreal General and Royal Victoria Hospitals.

I. In the amphitheatre of each of these Hospitals, demonstrations are given and operations are performed before the senior and junior classes on alternate days.

II. Small ward classes of about 10 men in each are taken through the wards by the surgeon in attendance, and instruction given at the bedside concerning the nature and management of surgical cases, in each hospital, at least once per week.

III. Beds are assigned to students in rotation, and each student is required to carefully study and report cases and to assist in the surgical dressing of the same. Certificates of case reporting are given, and are essential for graduation.

IV. In the Out-patient Department students have an exceptionally good opportunity to study a great variety of injuries, to witness operations in minor surgery, to come into personal contact with patients and to take part in the application of a variety of surgical dressings and appliances.

OBSTETRICS AND DISEASES OF INFANTS.

PROFESSOR, J. CHALMERS CAMERON.

DEMONSTRATOR, D. J. EVANS.

ASSISTANT DEMONSTRATORS, { *T. P. SHAW.* / *JAMES BARCLAY.*

This course will embrace: 1. Lectures on the principles and practice of the obstetric art, illustrated by diagrams, fresh and preserved specimens, the artificial pelvis, complete sets of models illustrating deformities of the pelvis, wax preparations, bronze mechanical pelvis, &c. 2. Bedside instruction in the Montreal Maternity, including external palpation, pelvimetry, the management and after-treatment of cases. 3. A complete course on obstetric operations with the phantom and preserved fœtuses. 4. The diseases of infancy.

5. A course of individual clinical instruction at the Montreal Maternity.

Arrangements have now been made for a graded course in Obstetrics, instruction being given separately to third year and final students.

Particular attention is given to Clinical instruction, and a Clinical examination in Midwifery similar to that held in Medicine and Surgery now forms part of the final examination.

A short course of lectures on diseases of infancy is given, supplemented by Clinical demonstration and ward work.

GYNÆCOLOGY.

PROFESSOR, WM. GARDNER.

LECTURER, F. A. M. LOCKHART.

The didactic course is graded, and consists of from forty to forty-five lectures given at intervals alternating with the lectures on Obstetrics and extending throughout the session. The anatomy and physiology of the organs and parts concerned is first discussed. Then the various methods of examination are fully described, the necessary instruments exhibited, and their uses explained.

The diseases peculiar to women are considered as fully as time permits, somewhat in the following order:—Disorders

of Menstruation; Leucorrhœa; Diseases of the External Genital Organs; Inflammations, Lacerations and Displacements of the Uterus; Pelvic Cellulitis and Peritonitis and Inflammations of the Ovaries and Fallopian Tubes; Benign and Malignant growths of the Uterus; Tumours of the Ovary; Diseases of the Bladder and Urethra. The lectures are illustrated as fully as possible by drawings and morbid specimens.

Clinical teaching, including out-patient and bed-side instruction, is given at both Royal Victoria and Montreal General hospitals by Professor Gardner and Doctors Lockhart and Webster. A large amount of Clinical material is thus available for practical instruction in this department of medicine. Numerous operations are done before the class, and made the subject of remarks. In addition to the ward-patients, each hospital conducts a large out-patient Gynæcological Clinic, to which advanced students are admitted in rotation and instructed in digital and bi-manual examination and in the use of instruments for diagnosis.

Particular attention is thus given to Clinical instruction, and a Clinical examination in Gynæcology similar to that held in Medicine and Surgery now forms part of the final examination.

MEDICAL JURISPRUDENCE.

PROFESSOR, GEO. WILKINS.

LECTURER ON MEDICO-LEGAL PATHOLOGY, WYATT JOHNSTON.

This course includes Insanity, the subject being treated of in its Medical as well as Medico-Legal aspects. Special attention is devoted to the subject of blood stains, the clinical microscopic and spectroscopic tests for which are fully described and shown to the class. The various spectra of blood in its different conditions are shown by the Microspectroscope, so well adapted for showing the reactions with exceedingly minute quantities of suspected material. Recent researches in the diagnosis of human from animal blood are alluded to. In addition to the other subjects usually included in a course of this kind, Toxicology is taken up. The modes of action

of poisons, general evidence of poisoning and classification of poisons are first treated of, after which the more common poisons are described, with reference to symptoms, post-mortem appearances and chemical tests. The post-mortem appearances are illustrated by plates, and the tests are shown to the class. A series of demonstrations and Clinics will be given by Prof. Johnston on the Medico-Legal cases arising out of the coroner's court, as well as those in the Montreal General Hospital. In this way Students will have practical clinical instruction in methods of Medico-Legal investigation in civil as well as in criminal cases.

OPHTHALMOLOGY AND OTOLOGY.

PROFESSOR, F. BULLER.
LECTURER, J. J. GARDNER.

This will include a course of twenty-five lectures on diseases of the Eye and Ear, both didactic and clinical. In the former, the general principles of diagnosis and treatment will be dealt with, including three lectures on the errors of refraction and faults of accommodation. At the clinical lectures given in the Hospitals cases illustrative of the typical forms of ordinary diseases of the Eye and Ear will be exhibited and explained to the class. In the out-patients' department of each Hospital students have excellent opportunities of gaining clinical experience.

BIOLOGY.

D. P. PENHALLOW, PROFESSOR BOTANY.
E. W. MACBRIDE, " ZOOLOGY.

This course will be given during the Autumn term of the first session; it will be largely practical, and will consist of Zoology and Botany. Zoology, the first eight weeks; Botany, the last four weeks.

A.—Animal Biology.

The Course in Animal Biology will discuss the fundamental properties of protoplasm; the principles of the formation of

tissues; the formation of organs; an outline of vertebrate structure and function, as exemplified by Paramecium and Vorticella, Hydra, Lumbricus and the Dog-fish.

Two lectures and one laboratory period each week.

B.—Plant Biology.

The Course in Plant Biology will deal chiefly with the general properties of cytoplasm; the structure and nature of the plant cell; movement; nutrition; respiration; fixation of carbon; division of labor and origin of organs; evolution of plant forms. These principles will be illustrated in their more simple forms by a Myxomycete, Pleurococcus, Spirogyra and Oedogonium, Fucus, Anthoceros and Pteris.

Two lectures and one demonstration each week.

PATHOLOGY.

The SIR DONALD SMITH, PROFESSOR,—J. G. ADAMI.
DEMONSTRATOR, A. G. NICHOLS.
ASSISTANT DEMONSTRATORS, D. D. MACTAGGART,
D. P. ANDERSON.

The following courses constitute the teaching on this subject:—

1. A course of General Pathology for Students of the Third Year (optional for those of the Fourth). Lectures are delivered twice weekly throughout the year.

2. A course of demonstrations in the performance of Autopsies for Students of the Third Year. The demonstrations are held once a week, from October until Christmas.

3. Demonstrations upon the Autopsies of the week for Students of the two Final Years. These are given during the session by Dr. Adami at the Royal Victoria Hospital, and by Dr. Wyatt Johnston at the General Hospital.

Practical Courses.

4. The performance of autopsies. Each student is required to take an active part in at least six autopsies. The autopsies are conducted at the General and Royal Victoria Hospitals by the Pathologists of the Hospitals and their assistants. In addition to the actual performance of the *sectio*

cadaveris, students are expected to attend the practical instruction given in connection with each autopsy, in the method of preparation and microscopic examination of the removed tissues, so as to become proficient in methods of preparation, staining and mounting.

5. A practical course in Morbid Histology for Students of the Third Year. This class is held once a week during the winter months. Six sections are as a rule distributed at each meeting of the class so that each student obtains a large and representative series of morbid tissues, and upon an average twenty minutes are devoted to the description and examination of each specimen. Laboratory fee to cover cost of slides, reagents, microscope, etc., $5.

6. A course of demonstrations upon Morbid Anatomy (Museum specimens) once weekly during the winter months, for students of the Fourth Year.

In addition to the above the staff of the department give instruction to the more advanced students who desire to undertake any special work in the laboratories. Classes in clinical pathology and microscopy are given from time to time at the Pathological Laboratory and at the General and Royal Victoria Hospitals under the direction of the Professors of Clinical Medicine. In connection with this department, two researches and teaching fellowships have been established; one by the Faculty of Medicine, and one by the Governors.

DEPARTMENT OF PUBLIC HEALTH AND PREVENTIVE MEDICINE.

The SIR DONALD SMITH, PROFESSOR,—ROBT. CRAIK.

SANITARY PHYSICS AND CHEMISTRY.	*PROF. ROBT. CRAIK.* *PROF. R. F. RUTTAN.*
BACTERIOLOGY AND PREVENTIVE MEDICINE.	*PROF. J. G. ADAMI.* *PROF. WYATT JOHNSTON.* *H. B. YATES.* *A. J. WILLIAMS.*

The Department of Public Health and Preventive Medicine has, owing to its endowment by Sir Donald A. Smith, been made one of the most important subjects of the third year.



Medical Buildings.
Laboratory of Hygiene.



Medical Buildings
Bacteriological Laboratory.

The instruction will consist of two lectures per week for the whole session. A systematic course in Bacteriology and Preventive Medicine, including Serum Therapy, will be followed by courses on the sanitary relations of water, soil, food and air, the use and relative value of disinfectants, domestic sanitation, including plumbing, heating, ventilation, the construction of habitations, etc., and will be illustrated by models and special apparatus. Lectures will also be given on personal hygiene, including bathing, exercise, etc., and on climate and health resorts. In addition to the course of systematic lectures, laboratory courses will be given in the Pathological and Chemical laboratories on Bacteriology, clinical and sanitary Chemistry. The laboratory work will extend over a period of three months, and will be given twice weekly.

A working museum and model room is equipped with working models and apparatus to illustrate the application of hygienic principles. Demonstrations will be given in the hygienic museum from time to time as required. (See Museums.)

LARYNGOLOGY AND RHINOLOGY.

PROFESSOR, H. S. BIRKETT.
DEMONSTRATOR, H. D. HAMILTON.

This course will consist of practical lessons in the use of the Laryngoscope and Rhinoscope. The instruction will be carried on with small classes, so that individual attention may be insured. A limited number of clinical lectures bearing upon interesting cases attending the clinic will be delivered during the session. These lectures will be, however, of an eminently practical nature.

MENTAL DISEASES.

PROFESSOR, T. J. W. BURGESS.

This course will comprise a series of lectures at the University on Insanity in its various forms, from a medical as well as from a medico-legal standpoint. The various types of mental diseases will be illustrated by cases in the Verdun Asylum, where clinical instruction will be given to groups of senior students at intervals throughout the session.

DISEASES OF INFANTS AND CHILDREN.

PROFESSORS, { *A. D. BLACKADER.*
J. C. CAMERON.

Although this subject does not constitute a special chair in the University, systematic instruction is given (*a*) in connection with the chair of Obstetrics and Diseases of Infants, by Prof. Cameron; (*b*) by a course of lectures, clinical and didactic by Prof. Blackader, and (*c*) through the Children's Clinic at the Montreal General Hospital and at the Infants' Home.

IV.

DOUBLE COURSES.

By special arrangement with the Faculty of Arts, it is now possible for students to obtain the double degree of B.A., and M.D., C.M., after only six years of study.

It has been decided to allow the Primary subjects (Anatomy, Physiology and Chemistry) in medicine to count as Honor subjects of the third and fourth years in Arts. It follows then that at the end of four years study a student may obtain his B.A. degree and have two years of his medical course completed.

The remaining two years of study are devoted to the third and fourth year subjects in Medicine.

The special provisions for Medical Students in the Arts course are as follows:—

In the Third Year in Arts, they may, if following the full course of the First Year in Medicine, take Physiology and Histology with practical work therein, or Anatomy and Practical Anatomy, as two of the courses under the heading of Science in the Ordinary Course.

Medical Students who have completed the Third Year in Arts and First Year in Medicine are required in the Fourth Year in Arts to take two only of the subjects of the Ordinary Course (or one subject with the Additional Course therein). Medical Students are recommended to continue in the Third and Fourth Years of the Arts Course subjects they have taken in the First and Second Years.

To secure these privileges, certificates of registration in the Medical Faculty must be presented at the beginning of each year to the Dean of the Faculty of Arts ; and at the end of each session in the first two years certificates of attendance on lectures and of passing the corresponding examinations must also be presented. At the end of the Third and Fourth Years, certificates must be presented to show that the full curriculum of the Medical Faculty for the year has been completed.

A certificate of Licentiate in Arts will be given along with the professional degree in Medicine to those who, previous to entrance upon their professional studies proper, have completed two years in the Faculty of Arts, and have duly passed the prescribed examinations therein.

V.

GRADUATE AND ADVANCED COURSES

The Faculty of Medicine in 1896 established post-graduate and special courses in connection with the Montreal General and Royal Victoria Hospitals and the various laboratories in the University buildings. These courses will be continued in 1900.

There will be two distinct sets of courses, one a short practical and clinical course for medical men in general practice who desire to keep in touch with recent advances in Medicine, Surgery and Pathology, and who wish special clinical experience in Gynaecology, Ophthalmology, Laryngology, etc. This course will last about six weeks, beginning about the first of May.

A special detailed programme will be prepared, and will be sent on application in February next. The fee, including hospital fees for both Hospitals, is fifty dollars.

The other courses will be for those who have just completed their regular course in Medicine, and desire special Laboratory or Clinical teaching before beginning practice.

Arrangements have also been made to accommodate a lim-

ited number of such graduates who desire advanced and research work.

Commodious laboratories for advanced work have been equipped in connection with the Pathological and Clinical departments of both the Royal Victoria and Montreal General Hospitals, and in connection with the general laboratories for Pathology, Pharmacology, Physiology and Chemistry, recently altered and extended in the new buildings of the Faculty.

Recent graduates of recognized universities desiring to qualify for examinations by advanced laboratory courses, or who wish to engage in special research, may enter at any time by giving a month's notice, stating the courses desired and the time at their disposal.

All the regular clinics and demonstrations of both hospitals will be open to such students on the same conditions as undergraduates in medicine of this University.

These laboratories have been open for graduates since May 1st, 1896.

Further details regarding courses, fees, etc., may be obtained on application to the Registrar.

THE GRADUATE COURSE OF 1899.

The Faculty of Medicine has just completed the fourth special course of instruction for general practitioners. This course began Tuesday, May 2nd, and closed June 10th, 1899.

The course consisted of:—

(A.)—**LABORATORY COURSES**—Systematic laboratory instruction was given from 9 to 10.30 every morning in Microscopical Methods, Clinical Microscopy and Clinical Bacteriology, including the histology of blood in disease and serum diagnosis. These courses were conducted by Profs. Adami and Wyatt Johnston, assisted by Drs. C. F. Martin, N. D. Gunn, Nichols, Anderson and Yates. A course of Operative Surgery on the cadaver was given by Prof. Armstrong from 5 to 6 p.m. during the second, third and fourth weeks of the course.

(B.) — **LABORATORY AND SPECIAL DEMONSTRATIONS** — These demonstrations were given daily from 10.30 to mid-day, and consisted of one or more of the following : Modern treatment of Diphtheria, Prof. Finley ; Operative Midwifery, Prof. J. C. Cameron; Mental Diseases, Dr. Burgess; Medico-Legal Autopsy Methods, Prof. Wyatt Johnston; Clinical use of Roentgen Rays, Prof. Girdwood; Illustrations of the Graphic Method as applied to Physiology and Clinical Medicine, Prof. W. Mills; Anatomical demonstrations on the Cadaver, Drs. McCarthy and Tait MacKenzie; Surgical Anatomy, Drs. Elder and J. Henderson; Clinical Chemistry and Urinalysis, Prof. Ruttan; Morbid Anatomy of certain diseases, Prof. Adami; Infant feeding (Modified Milk, etc.,) Dr. Evans.

(C.) — **MEDICAL AND SURGICAL CLINICS.** — For four days each week, during the first two hours of the afternoon, there were clinics on groups of cases in the wards of the Montreal General and Royal Victoria Hospitals. Those given in the Medical Wards of the Montreal General Hospital were given by Profs. Blackader and Lafleur ; in the Surgical Wards, by Prof. Shepherd and Dr. Elder ; in the Royal Victoria Hospital Medical Wards, by Prof Stewart and Dr. C. F. Martin; in the Surgical Wards, by Prof. Bell and Dr. Garrow. In addition two or three ward classes were given weekly.

(D.)—**CLINICS IN SPECIAL DEPARTMENTS OF MEDICINE AND SURGERY**— One or more of these clinics were given in the Hospitals each afternoon, after the regular Medical or Surgical Clinic, and during the entire afternoon on Wednesday and Saturday of each week. The following special Clinics were given: Ophthalmology in the Royal Victoria Hospital, by Prof. Buller; in the Montreal General Hospital, by Dr. J. Gardner; Dermatology, Prof. Shepherd; Genito-Urinary Surgery, Prof. Bell; Orthopedics, Dr. C. W. Wilson; Laryngology, Prof. Birkett and Dr. Hamilton ; Gynaecology, Prof. Wm. Gardner and Dr. Webster in the Royal Victoria Hospital, and Dr. Lockhart in the Montreal Gen-

eral Hospital; Aseptic Midwifery (at the Montreal Maternity Hospital), Prof. J. C. Cameron; Diseases of Children, Prof. Blackader and Dr. G. G. Campbell.

The above course of instruction is given wholly apart from the regular lectures, clinics, etc., for undergraduates in medicine, and the Graduates may enter on the course at any time between May 1st and June 15th.

Practitioners who purpose attending this course may obtain programme of course for 1900 on application after March next to the Registrar.

VI.

QUALIFICATIONS FOR THE DEGREE.*

1st. No one entering after September, 1894, will be admitted to the Degree of Doctor of Medicine and Master of Surgery who shall not have attended Lectures for a period of four nine months' sessions in this University, or some other University, College or School of Medicine, approved of by this University.

2nd. Students of other Universities so approved and admitted on production of certificate to a like standing in this University shall be required to pass all Examinations in Primary and Final Subjects in the same manner as Students of this University.

3rd. Graduates in Arts who have taken two full courses in General Chemistry, including Laboratory work, two courses in Biology, including the subjects of Botany, Embryology, Elementary Physiology and dissection of one or more types of Vertebrata, may, at the discretion of the Faculty, be admitted as second-year Students, such courses being accepted as equivalent to the first-year in Medicine. Students so entering will, however, not be allowed to present themselves for examination in Anatomy until they produce certificates of dissection for two sessions.

4th. Candidates for Final Examination shall furnish Testimonials of attendance on the following branches of Medical Education. ‡ viz:

ANATOMY. PRACTICAL ANATOMY. PHYSIOLOGY. CHEMISTRY. PHARMACOLOGY AND THERAPEUTICS. PRINCIPLES AND PRACTICE OF SURGERY. OBSTETRICS AND DISEASES OF INFANTS. GYNÆCOLOGY. THEORY AND PRACTICE OF MEDICINE. CLINICAL MEDICINE. CLINICAL SURGERY.	Of which Two full Courses will be required.
MEDICAL JURISPRUDENCE. GENERAL PATHOLOGY. HYGIENE AND PUBLIC HEALTH. PRACTICAL CHEMISTRY. OPHTHALMOLOGY AND OTOLOGY.	Of which One full Course will be required.
BIOLOGY. HISTOLOGY. PATHOLOGICAL ANATOMY. BACTERIOLOGY. MENTAL DISEASES. PEDIATRICS. MEDICAL AND SURGICAL ANATOMY.	Of which One Course will be required.†

* *It shall be understood that the programme and regulations regarding courses of study and examinations contained in this calendar hold good for this calendar year only, and that the Faculty of Medicine, while fully sensible of its obligations towards the students, does not hold itself bound to adhere absolutely, for the whole four years of a student's course, to the conditions now laid down.*

† Students enregistered in the Province of Quebec are required to attend and pass examinations in Laryngology and Minor Surgery.

‡ Provided, however, that Testimonials equivalent to, though not presciely the same as those above stated, may be presented and accepted.

He must also produce Certificates of having assisted at six Autopsies, of having dispensed Medicine for a period of three months, and of having assisted at twenty Vaccinations.

5th. Courses of less length than the above will only be received for the time over which they have extended.

6th. No one will be permitted to become a Candidate for the degree who shall not have attended at least one full Session at this University.

7th. The Candidates must give proof of having attended during at least twenty-four months the practice of the Montreal General Hospital or the Royal Victoria Hospital or of some other Hospital of not fewer than 100 beds, approved of by this University. Undergraduates are required to attend only the practice of the Out-Patient departments of the Hospitals during their second year.

8th. He must give proof of having acted as Clinical Clerk for six months in Medicine and six months in Surgery in the wards of a general hospital recognized by the Faculty, of having reported at least 10 medical and 10 surgical cases.

9th. He must also give proof by ticket of having attended for at least nine months the practice of the Montreal Maternity or other lying-in-hospital approved of by the University, and of having attended at least six cases.

10th. Every candidate for the degree must, on or before the 15th day of May, present to the Registrar of the Medical Faculty testimonials of his qualifications, entitling him to an examination, and must at the same time deliver to the Registrar of the Faculty an affirmation or affidavit that he has attained the age of twenty-one years.

11. The trials to be undergone by the Candidate shall be in the subjects mentioned in Section 4.

12. The following oath of affirmation will be exacted from the Candidate before receiving his degree:

SPONSIO ACADEMICA.

In Facultate Medicinæ Universitatis.

Ego, A——B——, Doctoratus in Arte Medica titulo jam donandus, sancto coram Deo cordium scrutatore, spondeo:—me in omnibus grati animi officiis erga hanc Universitatem ad extremum vitæ halitum perseveraturum; tum porro artem medicam caute, caste, et probe exercitaturum; et quoad in me est, omnia ad ægrotorum corporum salutem conducentia cum fide procuraturum; quæ denique, inter medendum, visa vel audita silere conveniat, non sine gravi causa vulgaturum. Ita praesens mihi spondenti adsit Numen.

13th. The fee for the Degree of Doctor of Medicine and Master of Surgery shall be thirty dollars, to be paid by the successful candidate immediately after examination.

VII.

EXAMINATIONS.

Frequent oral examinations are held to test the progress of the Student, and occasional written examinations are given throughout the Session.

The PASS AND HONOR examinations at the close of each Session are arranged as follows:—

First Year.

Examinations in BOTANY or ZOOLOGY, HISTOLOGY, PHYSIOLOGY, ANATOMY, CHEMISTRY Theoretical and Practical.

Students who have taken one or more university courses in Botany or Chemistry before entering may be exempted from attendance and examination. Students exempted in their first year subjects are allowed only a pass standing, but may present themselves for examination if they desire to attain an honor standing.

Second Year.

Examinations in ANATOMY, CHEMISTRY, PRACTICAL CHEMISTRY, PHYSIOLOGY, HISTOLOGY, PHARMACOLOGY and THERAPEUTICS.

Third Year.

Examinations in PHARMACOLOGY and THERAPEUTICS, MEDICAL JURISPRUDENCE, PUBLIC HEALTH and PREVENTIVE MEDICINE (including BACTERIOLOGY), GENERAL PATHOLOGY, MENTAL DISEASES, CLINICAL CHEMISTRY, OBSTETRICS, MEDICINE and SURGERY.

Fourth Year.

Examinations in MEDICINE, SURGERY, OBSTETRICS, GYNÆCOLOGY, OPHTHALMOLOGY, CLINICAL MEDICINE, CLINICAL SURGERY, CLINICAL OBSTETRICS, CLINICAL GYNÆCOLOGY, CLINICAL OPHTHALMOLOGY and PRACTICAL PATHOLOGY.

By means of the above arrangement a certain definite amount of work must be accomplished by the student in each year, and an equitable division is made between the Primary and Final branches.

A minimum of 50 *per cent. in each subject is required to Pass and* 75 *per cent. for Honors.*

Candidates must pass in all the subjects of each year; those who fail to pass in not more than two subjects of either the first, second or third years may be granted a supplemental examination at the beginning of the following session.

Supplemental examinations will not be granted, except by special permission of the Medical Faculty, and on written application stating reasons, and accompanied by a fee of $5.00 for each subject.

No candidate will be permitted, without special permission of the Faculty, to proceed with the work of the final year until he has passed all the subjects comprised in the Primary examination.

No student will be allowed to present himself for his final examinations who has not certificates of having passed all his Primary examinations in this University.

Candidates who fail to pass in a subject of which practical courses are required may, at the discretion of the Faculty, be required to repeat the course, and furnish a certificate of attendance thereon. A course in Practical Anatomy will be accepted as equivalent to a third course of lectures in General and Descriptive Anatomy.

VIII.

FELLOWSHIPS, MEDALS AND PRIZES.

The Faculty has begun to establish Teaching and Research Fellowships in connection with the various laboratories.

These fellowships are of a value of five hundred dollars per annum, and are tenable for three years.

Two are now established in connection with the department of Pathology—a Governor's Fellowship endowed by

one or two of the Governors of the University, and a Faculty Fellowship established by the Faculty. Other Fellowships will be announced as they are established.

1st. The "HOLMES GOLD MEDAL," founded by the Medical Faculty in the year 1865, as a memorial of the late Andrew Holmes, Esq., M.D., LL.D., late Dean of the Faculty of Medicine. It is awarded to the student of the graduating class who receives the highest aggregate number of marks in the different branches comprised in the Medical Curriculum.

The Student who gains the Holmes' Medal has the option of exchanging it for a Bronze Medal, and the money equivalent of the Gold Medal.

2nd. THE FINAL PRIZE.—A Prize in Books (or a Microscope of equivalent value) awarded for the best examination, written and oral, in the Final branches. The Holmes' medalist is not permitted to compete for this prize.

3rd. THE THIRD YEAR PRIZE.—A Prize in Books awarded for the best examination, written and oral, in the branches of the third year.

4th. THE SECOND YEAR PRIZE.—A prize in books for the best examination in all the branches of the second year in course.

5th. THE FIRST YEAR PRIZE.—A prize in books for the best examination in all the branches of the first year in course.

6th. The "SUTHERLAND GOLD MEDAL," founded in 1878 by the late Mrs. Sutherland in memory of her late husband, Professor William Sutherland, M.D. It is awarded for the best examination in General and Medical Chemistry, together with creditable examination in the primary branches. The examination is held at the end of the third year.

7th. The "CLEMESHA PRIZE IN CLINICAL THERAPEUTICS," founded in 1889 by John W. Clemesha, M.D., of Port Hope, Ont. It is awarded to the student making the highest marks in a special clinical examination.

IX.

FEES.

The total Faculty fees for the whole medical course of four full sessions, including clinics, laboratory work, dissecting material and reagents, will be *five hundred dollars*, payable in four annual instalments of $125 each.

For the convenience of the undergraduates, the Hospital fees will hereafter be payable in the Registrar's office at the University. Ten dollars to be paid at the beginning of each of the last three sessions, viz., the second, third and fourth years. This will entitle each undergraduate to perpetual tickets for both the Montreal General and Royal Victoria Hospitals.

Partial students will be admitted to one or more courses on payment of special fees. An annual University fee of two dollars is charged students of all the faculties for the maintenance of college grounds and athletics.

Students repeating the course of study of any Academic session are not required to pay full fees. A fee of twenty-five dollars will be charged, which will include Hospitals, dissecting material, chemical reagents, laboratory fees, etc. The same fee is charged students entering from other colleges who have already paid elsewhere fees for the courses taken.

It is suggested to parents or guardians of students that the fees be transmitted direct by cheque or P. O. Order to the Registrar, who will furnish official receipts.

All fees are payable in advance to the Registrar, and except by permission of the Faculty will not be received later than October 20th.

For Graduation Fees, see page 228.

For Hospital Fees, see pages 243 and 247.

X.

TEXT BOOKS.

ANATOMY.—Gray, Morris, Quain (Eng. Ed.)., Gervish.

PRACTICAL ANATOMY.—Cunningham's Practical Anatomy, Ellis' Demonstrations, Holden's Dissector and Landmarks.

PHYSICS.—Balfour Stewart.

INORGANIC CHEMISTRY.—Remsen, Wurtz's Elementary Chemistry.

ORGANIC CHEMISTRY.—Remsen.

PRACTICAL CHEMISTRY.—Odling.

PHARMACOLOGY and THERAPEUTICS.—Butler, White, Hare and Wood.

PHYSIOLOGY.—Foster and Shore's Physiology for Beginners, Mills' Textbook of Animal Physiology, Foster's Physiology, G. N. Stewart's Physiology, Mills' Class Laboratory Exercises.

PATHOLOGY.—Ziegler, Coats'.

PRACTICAL PATHOLOGY.—Mallory and Wright, Delafield & Prudden, Boyce.

BACTERIOLOGY.—Muir & Ritchie, Abbott.

HISTOLOGY.—Klein's Elements, Schafer's Essentials of Histology.

SURGERY.—Holmes, Moullin, Walsham, Erichsen, Treves, American Text-book of Surgery, Da Costa.

PRACTICE OF MEDICINE.—Osler, Tyson, Wood and Fitz.

CLINICAL MEDICINE.—Musser's Medical Diagnosis; Simon, Klemperer, Rainy and Hutchison, Vierort's Medical Diagnosis.

MEDICAL JURISPRUDENCE.—Reese, Guy and Ferrier.

MENTAL DISEASES.—Insanity and its Treatment, Blandford, 4th Ed.

MIDWIFERY.—Lusk, and American Text Book.

DISEASES OF CHILDREN.—Holt, Rotch, Smith and Starr.

GYNÆCOLOGY.—Hart and Barbour, Garrigues, Webster.

HYGIENE.—Parks, Wilson, Rohe.
BOTANY.—Gray's Text Book of Histology and Physiology.
ZOOLOGY.—Shipley (Invertebrata), Wiedersheim (Vertebrata).
OPHTHALMOLOGY.—De Schweinitz, Nettleship and Swanzy.
OTOLOGY.—Pritchard, Dalby.
LARYNGOLOGY.—Watson Williams and Karl Seiler, Grumwald's Atlas of Diseases of Larynx.
OPERATIVE SURGERY.—Jacobson, Treves, Kocher.
DERMATOLOGY.—Malcolm Morris, Hyde, Crocker, Unna.
MEDICAL DICTIONARY.—Gould, Dunglison, Hoblyn.

XI.

MUSEUMS.

The Faculty has during recent years devoted special attention to the development of its museums in the several departments in which objective teaching is of especial value in the education of the student.

There are now four museums in the Medical Building: (1) the Museum of Pathology, (2) the Anatomical Museum, (3) the Museum of Public Health and Preventive Medicine, (4) the Museum of Pharmacy.

Each collection is arranged and selected with the primary object of making it a teaching museum. These several collections are open to students and the public between 9 a.m. and 5 p.m.

PATHOLOGICAL MUSEUM.

PROF. J. G. ADAMI, DIRECTOR.
MAUD E. ABBOTT, B.A., M.D., ASSISTANT CURATOR.
M. JULES BAILLY, OSTEOLOGIST AND ARTICULATOR.

For the past fifty years the rich Pathological Material furnished by the Montreal General Hospital has been collected here. The Faculty is also greatly indebted to many medical men throughout Canada and different parts of the world for important contributions to the Museum.

During the past few years, numerous and extremely important additions have been made to the Medical Museum.

It is particularly rich in specimens of Aneurisms. In ad-

dition to containing a large number of the more common varieties of these formations, there are specimens of such rare conditions as Aneurism of the Hepatic and Superior Mesenteric Arteries, Traumatic Aneurism of the Vertebral, together with several of the cerebral and pulmonary arteries. The most important collection probably in existence of hearts affected with "Malignant Endocarditis" is also found. The Faculty are indebted to Prof. Osler, late of this University, for this collection.

The Museum contains also a very large collection of different forms of calculi. The Faculty are mainly indebted to Prof. Fenwick for this collection.

During the past seven years, M. Bailly, osteologist and articulator (lately with Tramond of Paris), has been engaged in arranging and mounting the very large number of specimens of disease and injuries of bones which have been accumulating for years. In this collection are to be found examples of fractures and dislocations of the spine, osteoporosis, congenital dislocation of the hip, fracture of the astragalus, multiple exostoses, &c., &c.

The Pathological Museum has recently undergone complete alteration. All the old fixtures have been removed, a new gallery has been erected about both rooms, reached by a single staircase in a small intermediate room in which is placed the medico-legal collection.

The first room on entering contains the extensive bone collection and calculi. The second and larger room is reserved for the moist preparations, which are arranged so as to be of easy access for the student. Water color drawings made from the fresh specimens are mounted on swinging frames, and also form a frieze at the ceiling. These serve to recall the fugitive colors of those preparations which become more or less altered on keeping.

Numerous specimens have been contributed from the surgical and medical wings of the Royal Victoria Hospital, and from the different departments of the Montreal General Hospital.

MUSEUM OF PUBLIC HEALTH AND PREVENTIVE MEDICINE.

DIRECTOR, R. F. RUTTAN.

MUSEUM ASSISTANT, CHARLES STEVENSON.

This Museum has been established from the interest accruing through the endowment of the Chair of Hygiene by Lord Strathcona and Mount Royal in 1893.

The museum at present is chiefly of interest on account of the number and excellence of the working models, illustrating the best modern methods of sterilisation, disinfection, filtration and ventilation, together with a very useful collection of modern sanitary apparatus, illustrating the advantages and disadvantages of the water carriage system for the disposal of refuse, etc.

The Director has much pleasure in acknowledging contributions of value from:

1. The Sanitary Construction Company of New York.
2. Richard King, King, Sprague & Co., New York.
3. Maignens Filtre Rapide Co., London, Eng.
4. L. Casella, London, Eng.
5. Messrs. Doulton & Co., Lambeth Pottery, London, E.C.
6. The Sanitary Institute, Parke's Museum, London.
7. The Hygienic Referendum, Hornsey, London, Eng.
8. Messrs. Newton & Co., London.
9. The Expanded Metal Co., London.
10. A. B. Reck, Copenhagen, Denmark.
11. Fischer Filter Plate Co.
12. J. W. Hughes, Montreal.
13. Wormser, Filterplatten-Werk, Worms, Germany.
14. The Laing Packing Company, Montreal.

The Department of Hygiene is also indebted to Mr. Fleming, Sanitary Engineer, for assistance and advice.

ANATOMICAL MUSEUM.

DIRECTOR, PROFESSOR F. J. SHEPHERD.

M. JULES BAILLY, OSTEOLOGIST AND ARTICULATOR.

This Museum occupies a large room on the same floor and adjoining the Anatomy Lecture Room and Dissecting Room.

Smaller apartments in connection are used for private research, which is encouraged in every way by the Faculty.

The Museum is well furnished and comfortable, and students have every opportunity of studying Human, Comparative and Applied Anatomy.

This department has during the past few years added a very complete collection of plaster and papier maché models by Steger, after the well-known works of His and Braune, comprising:

(*a*) A complete set of Steger's brain sections.

(*b*) Models of the cerebro-spinal and sympathetic nervous systems.

(*c*) Professor Cunningham's well-known and beautiful casts of the head, showing the relation of the cerebral convolutions to the skull and its sutures.

A large collection of human brains, made by Professor Osler, formerly of this University, exhibiting the various types and extremes.

A large and rare collection of anomalies of the Renal vessels and ureter, and the aorta and its branches.

In Comparative Anatomy the student will find a fair amount of material, the study of which will greatly aid him in the elucidation of many points in Human Anatomy.

Many skeletons mounted by Mons. Jules Bailly, Articulator to the University, representing the various classes, orders, genera and species of the animal kingdom may be consulted.

A large collection, showing the pectoral girdle in birds, has been prepared under the supervision of the Professor of Anatomy.

Moist and dry preparations of dissections, a large collection of frozen cross sections of the human body, showing the normal relations of the viscera, etc., will be found convenient for study.

During the past year numerous valuable specimens have been presented to the Museum and its stores, which will be acknowledged in the next Calendar.

XII.

LIBRARY.

LIBRARIAN, PROF. F. G. FINLEY.
ASSISTANT LIBRARIAN, Miss M. R. CHARLTON.

The Library of the Medical Faculty now comprises upwards of twenty thousand volumes, the largest special library connected with a medical school on this continent.

The valuable libraries of the late Professors Robert Palmer Howard, George Ross, Richard L. MacDonnell, T. Johnston Alloway and of Dr. Allen Ruttan have been donated to the Medical Faculty.

The standard text-books and works of reference, together with complete files of the leading periodicals, are on the shelves. Students may consult any work of reference in the library between 9 a.m. and 6 p.m. A library reading-room for the use of students is provided.

Extracts from the Library Regulations.

I. During the College Session the Library is open daily (except Sundays and general public holidays) from 9 a.m. till 6 p.m. During vacation from 10 a.m. to 5 p.m.

II. The stack room is not open to students or to the public.

III. The books in the Library are classed in two divisions: 1st, those which may be taken from the Library; 2nd, those which may not, under any circumstances, be removed from the Library. The latter class includes all catalogues, dictionaries and encyclopædias.

IV. Students will be allowed to use regular text-books only in the Library. Any other book may be taken out at 5.30 p.m., to be returned at the next day. If books so removed from the Library are not returned punctually, a fine will be imposed, and if the delay be serious the student may be suspended from use of the Library at the discretion of the Librarian.

V. Students may take out books, subject to the above regulations, to the number of three volumes at one time.

VI. Books may be taken from the Library only after they have been especially asked for and charged at the delivery desk; borrowers who cannot attend personally must sign and date an order, giving the titles of the books desired and the name of the person deputed to procure the same.

VII. Damage to or loss of books shall be made good to the satisfaction of the Librarian and of the Library Committee. Writing or making any mark upon any book belonging to the Library is unconditionally forbidden. Any persons found guilty of wilfully damaging any book in any way shall be excluded from the Library, and shall be debarred from the use thereof for such time as the Library Committee may determine.

VIII. Silence must be strictly observed in the Library.

IX. Infringement of any of the rules of the Library will subject the offender to a fine or suspension of his privileges, or to such other penalty as the nature of the case may require.

The number of volumes presented to the Library from June 4th, 1898, to May 25th, 1899, is	850
Those added by purchase	130
Total additions to May 25th	980
The number of pamphlets and reports	200
The attendance of readers from June 4th, 1898, to May 25th, 1899, has been	8,008
The attendance from June 2nd, 1897, to May 14th, 1898, was	6,350
The attendance from June 1st, 1896, to June 1st, 1897, was	5,920
The attendance from June 1st, 1895, to June 1st, 1896, was	4,875
The number of books taken out for home use has been	3,209
The number of Journals and pamphlets has been	1,000
	4,209

This does not include the works consulted in the Library.

The Faculty has endeavored to make the Library as complete as possible for research work. Complete files of almost all the important periodicals are now on the shelves, including foreign as well as English and American Journals. A large number of transactions of various societies has recently been acquired, and also the Berlin and Paris theses.

Arrangements have been made whereby practitioners both in the city and country can avail themselves of the library, the only conditions being the payment of express charges and a guarantee for the safe return of books borrowed.

XIII.

McGILL MEDICAL SOCIETY.

This Society, composed of enregistered Students of the Faculty, meets every alternate Saturday during the Autumn and Winter Terms, for the reading of papers, case reports and discussions on medical subjects. A prize competition has been established in senior and junior subjects, the senior being open to all to write upon, while only the 1st, 2nd and 3rd year students are allowed to compete in the junior subjects. The papers are examined by a board elected from the Professoriate, and a first and second prize in each division of subjects is awarded to the successful candidates.

Names of competitors and titles of papers shall be sent to the Chairman of the Programme Committee before September 1st, and all papers shall be subject to the call of the Committee on October 1st. All papers shall be handed in for examination on or before January 10th.

The Students' reading room has been placed under the control of this Society, in which the leading English and American Medical Journals are on file as well as the leading daily and weekly newspapers of the Dominion.

The annual meeting is held the first week of the Spring Term, when the following officers are elected: Hon. President, elected from the Faculty; President, Vice-President, Secretary, Assistant Secretary, Treasurer, Reporter, Pathologist, and three Councilmen (of whom two shall be elected from the Faculty).

XIV.

COST OF LIVING, &c.

This will, of course, vary with the tastes and habits of the Student, but the necessary expenses need not exceed those in smaller towns. Good board may be obtained from $15 to $20 per month. A list of boarding-houses, which are inspected annually by a sanitary committee, is prepared by the Secretary of the University, and may be procured from the Janitor at the Medical College.

XV.

HOSPITALS.

The City of Montreal is celebrated for the number and importance of its public charities. Among these its public hospitals are the most prominent and widely known. Those in which medical students of McGill University will receive clinical instruction are: (1.) The Montreal General Hospital. (2.) The Royal Victoria Hospital. (3.) Montreal Maternity Hospital.

The Montreal General Hospital has for many years been the most extensive clinical field in Canada. The old buildings, having proved inadequate to meet the increased demand for hospital accommodation, have recently been increased by the addition of two surgical pavilions; the Campbell Memorial, and the Greenshields Memorial, and of a new surgical theatre. The interior of the older buildings now has been entirely reconstructed on the most approved modern plans.

The Royal Victoria Hospital at the head of University Street, which in structure and arrangements ranks among the finest modern hospitals of either continent, was opened for the reception of patients the first of January, 1894, and affords exceptional opportunities for clinical instruction and practical training.

Montreal General Hospital.

This hospital has been for many years the most extensive clinical field in Canada.

It consists of a Surgical and Medical Department.

The Surgical Department has two large pavilions, containing four wards 135 feet long by 35 broad, with an intervening and connecting building in which is a large operating theatre of the most modern type, capable of seating over three hundred and fifty students. In connection with this are preparation, etherising, instruments, sterilising and surgeons' rooms, also smaller operating rooms. The Surgical pavilions which were built three years ago accommodate over one hundred patients.

The old part of the hospital, consisting of the Reed, Richardson and Morland wings, has during the past year been completely rebuilt and remodelled, and forms the Medical Department. This part contains four wards, 100 feet by 40, and is arranged for 150 beds. In this building there are wards for Gynaecological and Ophthalmological patients, a number of private wards and laboratories for Clinical Chemistry. There is also a medical amphitheatre capable of seating 150 students and a gynæcological operating-room fitted up in the most modern manner. The central part of the old building is for administration purposes.

A completely new and commodious out-door patient department has been provided on the ground floor of the Richardson wing, and there is ample accommodation for the various special departments as well as large rooms for general medical and surgical patients.

The Pathological Department is a completely new building in which are the post-mortem theatre and rooms for microscopical and bacteriological work, and also a mortuary and chapel. In this building students are offered every opportunity of perfecting their knowledge of morbid anatomy and pathological histology.

The old Fever Wards on the grounds of the Hospital have been completely remodelled, and are now used as a laundry and kitchen.

A much larger number of patients receive treatment in the Montreal General Hospital than in any other Canadian Hospital. Last year's report shows that between two and three thousand Medical and Surgical cases were treated in the wards, and the great proportion of these were acute cases, as may be gathered from the fact that the average duration of residence was only 24.02 days. Upwards of thirty-two thousand patients are annually treated in the out-door department of this Hospital.

Annual tickets entitling students to admission to the Hospital must be taken out at the commencement of the session, price $5.00. These are obtained at the College. Perpetual tickets will be given on payment of the third annual fee.

The Royal Victoria Hospital.*

This Hospital is situated a short distance above the University Grounds on the side of the Mountain, and overlooks the city. It was founded in July, 1887, by the munificence of Lord Mount Stephen and Sir Donald Smith, who gave half a million dollars each for this purpose.

The buildings, which were opened for the reception of patients on the first of January, 1894, were designed by Mr. Saxon Snell of London, England, to accommodate between 250 and 300 patients.

The Hospital is composed of three main buildings connected together by stone bridges; an Administration Block in the centre and a wing on the east side for medical patients, in immediate connection with which is the Pathological wing and mortuary, and a wing on the west side for surgical patients.

The Administration block contains ample accommodation for the resident medical staff, the nursing staff and domestics. The patients' entrance, the dispensary and admission rooms are also situated in this building.

The Medical wing contains three large wards, each 123 feet

* Fees for this hospital are the same as those for the Montreal General Hospital

long by 26 feet 6 inches wide, one ward 40 feet by 26 feet 6 inches, and fifteen private and isolation wards averaging 16 feet by 12 feet, also a medical theatre with a seating capacity for 250, and three rooms adjacent to it for clinical chemistry and other purposes. North of this wing and in direct connection with it are the Pathological laboratories and mortuary.

In this wing are situated the mortuary proper, the chapel, a post mortem room capable of accommodating 200 students, and laboratories for the microscopic and bacteriological study of morbid tissues, some designed for the use of students and others for post graduation courses and special research. Special laboratories for Pathological chemistry, Experimental Pathology, Bacteriology and Photography are also provided.

The Surgical wing contains three large wards, each 123 feet long by 26 feet 6 inches wide, four wards each 40 feet by 32 feet, and seven private and isolation wards, averaging 16 feet by 12 feet; also a surgical theatre with a seating capacity for 250, with six rooms adjacent for preparation and after recovery purposes.

In this wing are also the wards for Gynaecology and Ophthalmology.

A new wing will be opened in the autumn of 1899 for the treatment of out-patients, and will contain special operating rooms for Gynaecology, Ophthalmology, Laryngology, etc.

XVI.

CLINICAL INSTRUCTION.

During the Session of 1899-00, three Medical, three Surgical, two Gynaecological and two Ophthalmological clinics will be held weekly in both the Montreal General and Royal Victoria Hospitals.

In addition, tutorial instruction will be given in these different departments in the wards, out-patient rooms and laboratories. Special weekly clinics will be given in the Montreal General Hospital on Dermatology and Laryngology and in the Royal Victoria Hospital on diseases of the Genito-Urinary system, and Laryngology.

CLINICAL CLERKS in the medical and surgical wards of both Hospitals are appointed every three months, and each one during his term of service conducts, under the immediate directions of the Clinical Professors, the reporting of all cases in the ward allotted to him. Students entering on and after October, 1893, will be required to show a certificate of having acted for six months as clinical clerk in medicine and six months in surgery, and are required to have reported at least ten cases in medicine and ten in surgery. The instruction obtained as clinical clerk is found to be of the greatest possible advantage to Students, as affording a true *practical* training for his future professional life.

DRESSERS are also appointed to the Out-door Departments. For these appointments, application is to be made to the Assistant Surgeons, or to the resident surgeon in charge of the out-patient department.

The large number of patients affected with diseases of the eye and ear, now attending the special clinics at both hospitals, will afford Students ample opportunity to become familiar with all the ordinary affections of those organs, and to make themselves proficient in the use of the ophthalmoscope, and it is hoped that every student will thus seek to gain a practical knowledge of this important branch of Medicine and Surgery. Operations are performed on the eye by the Ophthalmic Surgeon after the outdoor patients have been seen, and Students are invited to attend the same, and as far as practicable to keep such cases under observation so long as they remain in the Hospital.

There are now special departments in both Hospitals for Gynaecology and Laryngology, presided over by Specialists in these branches. Students are thus enabled to acquire special technical knowledge under skilled direction. The plan of teaching practical gynaecology for the past five years with marked success has been the limitation of the number of Students to two or three, who, in rotation, assist at the examinations, and receive instruction in the diagnosis and treatment of uterine diseases and the use of Gynaecological instruments.

The Clinics at the Montreal General Hospital in Dermatology and Laryngology are very large, and afford a practical training in affections of the skin and throat rarely obtained by medical students.

A special clinic for diseases of the Genito-Urinary Organs has been established at the Royal Victoria Hospital.

Infectious diseases and Insanity will also be taught clinically, the former in the special wards for infectious diseases and the latter at the Verdun Hospital for the Insane.

The Montreal Maternity.

The Faculty has great pleasure in announcing that the Corporation of the Montreal Maternity has made very important additions to its building, and has still further improvements in contemplation. Students will therefore have greatly increased facilities for obtaining a practical knowledge of obstetrics and diseases of infancy. An improved Tarnier-Budin phantom is provided for the use of the students, and every facility afforded for acquiring a practical knowledge of the various obstetric manipulations. The institution is under the direct supervision of the Professor of Midwifery, who devotes much time and attention to individual instruction. Students who have attended the course on obstetrics during the autumn and winter terms of the third year will be furnished with cases in rotation, which they will be required to report and attend till convalescence. Clinical midwifery has been placed upon the same basis as Clinical Medicine and Surgery, and a final Clinical examination instituted. Regular courses of clinical lectures are given throughout the session, special attention being paid to the important subject of infant feeding. The Walker-Gordon process of modifying milk is explained and demonstrated. During the autumn and winter terms the Demonstrator of Obstetrics gives Clinical Demonstrations in the wards and instruction in operative work on the phantom. Students will find it very much to their advantage to pay special attention to their Clinical work during the spring term of the third year and the following summer. Two resident accoucheurs are appointed year-

ly from the graduating class to hold office for a period of six months each.

Fee for twelve months, $12.00, payable at the Maternity Hospital.

XVII.

STUDENTS' APPOINTMENTS.

Montreal General Hospital—Seven Resident Medical Officers.

The following were the candidates at the examination, successful for vacant positions on the house staff of the Montreal General Hospital, for the year beginning September 1st, 1899: —R. A. A. Shore, B.A., M.D.; A. H. Gordon, M.D.; C. T. Fitzgerald, M.D.; W. A. Cumming, M.D.; W. F. Brown, B.A., M.D.; T. G. McNeice, W. A. Wilkins.

Royal Victoria Hospital—Six Resident Medical Officers.

The following graduates in 1899 were appointed to fill vacancies in the Royal Victoria Hospital.

In Medicine, E. F. Murphy, T. Turnbull.

In Surgery, T. R. O'Brien, B.A.

In Ophthalmology, F. T. Tooke, B.A.

University Maternity—Two Resident Medical Officers.

James Barclay, M.D., was appointed in 1898.

Clinical Clerk, Gynaecology.

" " Laryngology.

" " Diseases of Children.

" " Dermatology.

" " Diseases of Nervous System.

Out-door Dressers.

Dressers in Eye and Ear Department.

Medical Clinical Clerks.

Post-mortem Clerks.

Student Demonstrators of Anatomy, 4 third-year Students.

Prosectors to Chair of Anatomy, 4.

Assistants in Practical Histology Course, 2.

Assistants in Practical Physiology Course, 4.

Assistants in Practical Chemistry, 6.

XVIII.

RULES FOR STUDENTS.

1. In the case of disorderly conduct, any Student may, at the discretion of the Professor, be required to leave the class-room. Persistence in any offence against discipline, after admonition by the Professor, shall be reported to the Dean of the Faculty. The Dean may, at his discretion, reprimand the Student, or refer the matter to the Faculty at its next meeting, and may in the interval suspend from classes.

2. Absence from any number of lectures can only be excused by necessity or duty, of which proof must be given, when called for, to the Faculty. The number of times of absence, from necessity or duty, that shall disqualify for the keeping of a Session, shall in each case be determined by the Faculty.

3. While in the College, Students are expected to conduct themselves in the same orderly manner as in the Class-room.

4. When Students are brought before the Faculty under the above rules, the Faculty may reprimand, impose fines, disqualify from competing for prizes and honors, suspend from Classes, or report to the Corporation for expulsion.

5. Any Student found guilty of dishonest conduct at an examination, may be expelled from the University or suspended for a term of years.



University Library.
Main Reading Room.



Redpath Museum
Interior View.

Faculty of Comparative Medicine and Veterinary Science.

THE PRINCIPAL (*ex officio*).

Professors :

D. McEACHRAN, F.R.C.V.S., V. S. Edin., D.V.S., Dean of the Faculty.
M. C. BAKER, D.V.S.
CHARLES McEACHRAN, D.V.S., Registrar of the Faculty.

Associate Professors :

G. P. GIRDWOOD, M.D.
GEO. WILKINS, M.D.
D. P. PENHALLOW, B.Sc.
WESLEY MILLS, M.A., M.D., D.V.S.
J. G. ADAMI, M.A., M.D. (Cantab.).

Lecturers :

N. D. GUNN, M.D.
C. F. MARTIN, B.A., M.D.

Examiners :

The Professors and Associate Professors, together with the following gentlemen nominated by the Provincial Government:

J. A. COUTURE, D.V.S., 49 Garden Street, Quebec.
A. McCORMICK, D.V.S., Ormstown, P.Q.
A. W. HARRIS, D.V.S., Ottawa, Ont.
JOHN M. PARKER, D.V.S., Haverhill, Mass.
FRANK MILLER, V.S., New York.
A. W. CLEMENT, D.V.S., Baltimore, Md., U.S.

Matriculation Examiner.—A. N. SHEWAN, M.A., Lansdowne School, Montreal.

SESSION 1899-1900.

The tenth Session of the Faculty (being the thirty-fourth of the Montreal Veterinary College) will be opened on Wednesday, 20th September, 1899. The regular course of lectures will begin on the following day, at the hours named in the time table, and will continue till the end of March. The hours of lectures will be announced later, together with the alterations which may be necessary, the course as herein announced being subject to such changes as the Faculty may see fit to make.

The Montreal Veterinary College was inaugurated in 1866.

The complete course of study in this Faculty extends over three years. Graduates of recognized Medical Colleges are allowed to present themselves for examination after regular attendance on one full course; graduates of recognized Agricultural Colleges in which Veterinary Science constitutes a branch of study, after regular attendance for two full courses.

Allowances will be made to students of Human or Comparative Medicine, or others who can produce certified class tickets for attendance on any of the subjects embraced in the curriculum from any recognized college or university.

Graduates and students who avail themselves of the above privileges will nevertheless be required to pass an examination in the subjects comprised in the three years' course, unless, from satisfactory evidence otherwise produced, the examiners consider it to be unnecessary.

Graduates of recognized Veterinary Colleges desirous of taking the degree may do so by attendance on the final subjects for one full session, but will be required to pass the examinations on all the subjects embraced in the curriculum, botany excepted.

Occasional and agricultural students will be received without matriculation for attendance on any particular series of lectures. Such students will not be examined, nor will they be entitled to receive class certificates except as occasional students, nor will such attendance be accepted should the student subsequently wish to become a regular student of the Faculty.

MATRICULATION.

Every student, previous to his admission, must produce a certificate of educational requirements satisfactory to the Faculty, or submit himself to a matriculation examination in (1) writing, (2) reading aloud, (3) dictation, (4) English grammar and (5) composition, (6) outlines of geography, with special reference to North America, (7) arithmetic, including vulgar and decimal fractions.

NOTE.—It is contemplated to add the rudiments of Latin to the matriculation in the near future.

A. N. Shewan, M.A., will hold the matriculation examination on Saturday, 16th September, 9 a.m., at the College, 6 Union Avenue, when all those intending to enter the course should present themselves for examination. Candidates possessing certificates of education or of previous matriculation should produce them for the inspection and approval of the examiner. Graduates of any Faculty in a recognized University or Agricultural College are not required to matriculate.

No College is recognized unless its students are required to matriculate.

REGISTRATION AND PAYMENT OF FEES.

The following are the College regulations:—

All students desirous of attending the classes shall, at the commencement of each session, enrol their names and residences in the register of the Faculty, and procure from the Registrar a ticket of registration, for which each student shall pay a fee of $5.

The said register shall be closed on the last day of October in each year. The fees are payable to the Registrar, and all class tickets will be issued by him, *and must be paid in advance* at the time of registration; the Registrar will on no consideration issue tickets till the fees are paid. Intending students must govern themseves accordingly.*

All students must register, including those who receive free bursaries.

Fees for the whole course are $75 per session, and, in all cases, must be paid on entering. Matriculation fee, $5, which is to be paid prior to the examination; $5 for registration, and $5 for re-registration, payable at the beginning of each of the following two Sessions, and $20 on receiving the diploma. Students who are allowed time for previous study will be required to pay full fees, and $5 for registration each session. Payments must be made in all cases as above.

In addition to the above Faculty fees, every undergraduate must pay an annual fee of $2 for maintenance and use of college grounds.†

*Owing to losses incurred by non-payment of fees, the Registrar must refuse registration till the fees are paid, which may be returned if the applicant fails to matriculate.

† *First Year, Fees*	$75	*Second Year, Fees*	$75	*Third Year, Fees*	$75
Matriculation "	5	Registration "	5	Registration "	5
Registration "	5	Grounds "	2	Grounds "	2
Grounds "	2		$82	Diploma "	20
	$87				$102

STUDENTS OF THE PROVINCE OF QUEBEC.

In consideration of the annual grant, the Council of Agriculture has the privilege of sending thirteen pupils, free of expense, to the whole course; such students, however, pay a fee of $5 for the course in Botany, $5 annually for registration, and $2 annual ground fees. These Bursaries may be obtained by young men resident in the Province of Quebec, by application made to the Dean of the Faculty in the handwriting of applicant, accompanied by a recommendation from the Agricultural Society of the district in which they reside, provided the Council considers them qualified by education and in other respects for entering the College.

In all cases, except when specially arranged, Bursars will be required to give a guarantee that they will attend three Sessions, and failing to do so, they shall be required to pay the fees for the Sessions which they have attended. These Bursaries are not intended for nor will they be given to such students as do not require such aid.

GENERAL REGULATIONS.

Students of this Faculty will be graded as of the first, the second, and the final year. In each year students will take the studies fixed for that year only, unless by special permission of the Faculty.

Persons desirous of entering as Occasional Students shall apply to the Dean of the Faculty for admission as such, and shall obtain a ticket or tickets for the class or classes they desire to attend.

All students shall be subject to the following regulations as regards attendance and conduct :—

A class-book shall be kept by each Professor and Lecturer, in which the presence or absence of Students shall be carefully noted; and the said class-book shall be submitted to the Faculty at a meeting to be held between the close of the lectures and the commencement of the examinations; and the Faculty shall, after examination of such class-book, decide which students shall be deemed to have been sufficiently regular in their attendance to entitle them to proceed to the examination in the respective classes.

Punctual attendance on all the classes proper to his year is required of each Student. Absence or tardiness, without sufficient excuse, or inattention or disorder in the Class-room, if persisted in after admonition by the Professor, will be reported to the Dean of the Faculty, who may reprimand the Student or report to the Faculty, as he may decide. While in the building, or going to or from it, Students are expected to conduct themselves in the same orderly manner as in the Class-rooms. Any Professor observing improper conduct in the

Class-rooms, or elsewhere in the building, will admonish the Student. and, if necessary, report him to the Dean.

When Students are reported to the Faculty under the above rules, the Faculty may reprimand, report to parents or guardians, disqualify from competing for prizes or honors, suspend from classes, or report to the Corporation for expulsion.

Any Students injuring the furniture or building will be required to repair the same at his own expense, and will, in addition, be subject to such penalty as the Faculty may see fit to impose.

All cases of discipline involving the interest of more than one Faculty, or of the University generally, shall be reported to the Principal, or, in his absence, to the Vice-principal.

The College year shall be divided into two terms, the first extending to the Christmas vacation, and the second from the expiration of the Christmas vacation to the 30th March following.

Each lecture shall be of one hour's duration, but the Professors shall have the right to substitute an examination for any such lecture.

At the end of each term there shall be a general examination of all the classes, under the superintendence of the Professors, and such other examiners as may be appointed by the Corporation. The results shall be reported as early as possible to the Faculty.

The students have all the privileges of the McGill Medical Faculty's Laboratories, which are thus described in their annual calendar:—

PHYSIOLOGICAL LABORATORY.

The Physiological Laboratory, which is situated on the ground floor, is supplied with the most modern apparatus for the practical teaching of this most important branch of the medical curriculum. It contains, amongst other valuable instruments, kymographs, various manometers, etc., for demonstrating blood pressure; myographs, rheocords, moist chambers, etc., and various electrical appliances for demonstrating experiments in connection with nerve and muscle; special apparatus for illustrating various points in respiration; apparatus specially suitable for demonstrating the processes of digestion, as well as the chemical composition and nature of the secretions, and the chief constituents of the tissues and nutritive fluids. The laboratory is arranged in such a way as to permit of Students assisting at, and taking part in, these demonstrations. During the past session, important additions of apparatus have been made to the Physiological Laboratory.

CHEMISTRY.

The course in chemistry embraces Chemical Physics, in the first portion of the course, the theory of Chemistry, both inorganic and organic, in the latter part of the course. The Chemical Laboratory, which is available to the Students of Comparative Medicine, is large, lofty and well lighted, and can accommodate comfortably 76 men at one time. Each Student when entering on his course, has a numbered table in the laboratory assigned to him for his use during the session. Each table has its own gas and water fixtures, and is provided with shelves for its corresponding set of reagent bottles, as well as a drawer and locker containing a modern set of chemical apparatus especially adapted for the work. This apparatus is provided by the Professor of Chemistry, and supplied to each Student without extra charge. The Student is required to pay only for apparatus broken or destroyed.

The laboratory is furnished with a large draught closet for ventilation, sulphuretted hydrogen apparatus, gas and combustion furnaces, etc., giving to the student unsurpassed advantages for acquiring a sound and practical knowledge of medical chemistry.

PATHOLOGICAL LABORATORY.

In the Pathological Laboratory accommodation will be provided for Students or practitioners who desire to carry on advanced study or private pathological research. The laboratory has been entirely re-built recently, and is well stocked with the usual apparatus for pathological and bacteriological work.

The demonstrations in Morbid Anatomy will be given in a small laboratory, specially arranged for the work. The classes in Pathological Histology will be held in the Pathological Laboratory.

Through the generosity of the late Mr. J. H. R. Molson, the large house previously occupied by Professor Harrington has been converted into a Pathological Laboratory, having on the upper floor the Class and Demonstration room, capable of holding practical classes of fifty students. This is fully fitted with microscopes and other apparatus for the purpose of Pathological Histoloy and Bacteriology. Upon the first floor are the Library and Professor's room, the Preparation and Research rooms, with a smaller Incubator room for Bacteriological use. On the ground floor are situated the animal and store rooms and the apartments of the assistant.

Accommodations will be provided for students or practitioners who desire to carry on advanced study or pathological research.

HISTOLOGICAL LABORATORY.

The Histological Laboratory is a large, well-lighted room on the second floor. It is so arranged that over eighty students can be present at the microscopical demonstrations. For this purpose it is supplied with thirty-five microscopes, all from the well-known makers, Zeiss, Hartnock and Leitz. From the large number of microscopes employed, students will have special facilities in studying and making themselves thoroughly acquainted with the specimens that are the subject of demonstration.

PRACTICAL MICROSCOPY.

This is an entirely optional course, in charge of Prof. Wilkins, assisted by Dr. Gunn. It is intended especially for teaching the technique of Microscopy. Students will be shown how to examine blood, etc., also to cut, stain, and mount specimens. For this purpose, they will have furnished them normal structures, with which they will be able to secure a cabinet of at least 100 specimens, which will be of great benefit when in practice. Reagents and everything, except cover glasses and cabinet cases, provided. Fee, $8.

COURSES OF LECTURES.

BOTANY.*

D. P. PENHALLOW, M.A.Sc.

The course in Botany is designed to give Students a thorough grounding in the general morphology of plants and ability to determine species. It includes a practical study of the Spermaphytes and Pteridophytes during the first half of the session, and after Christmas a Course of lectures on general Morphology, together with a special discussion of plants possessing poisonous properties, and therefore liable to produce injury to grazing animals.

The Morphological Laboratory is well equipped with efficient dissecting microscopes, while the Botanic Garden and Herbarium afford an ample supply of fresh and dried material.

ZOOLOGY.*

PROF. MACBRIDE, M.A., B.Sc., LECTURER.

This course includes a systematic study of the classification of animals, illustrated by Canadian examples, and by the collections in

* Students may either take Botany or Zoology, but must intimate at the beginning of the Session their choice, and adhere to this, except by special permission of the Faculty. Students desiring to attend both subjects in one session may do so by permission of the Faculty.

the Peter Redpath Museum. It affords suitable preparation for collecting in any department of Canadian Zoology, or Palaeontology, and as an introduction to Comparative Physiology.

Students in Botany or Zoology will receive tickets to the Peter Redpath Museum, and to the Museum of the Natural History Society of Montreal.

It is optional with students to select either the course on Botany or on Zoology.

CHEMISTRY.

GILBERT P. GIRDWOOD, M.D.

Inorganic Chemistry is fully treated; a large portion of the course is devoted to Organic Chemistry and its relations to Medicine. The branches of Physics bearing upon or connected with Chemistry also engage the attention of the Class. For experimental illustration, abundant apparatus is possessed by the College.

The Chemical Laboratory will be open to members of the Class to repeat experiments performed during the course, under the superintendence of the Professor or his Assistant.

PHYSIOLOGY.

T. WESLEY MILLS, M.A., M.D., D.V.S.

The purpose of this Course is to make students thoroughly acquainted, so far as time permits, with modern Physiology, its methods, its deductions, and the basis on which the latter rest. Accordingly, a full course of lectures, is given, in which both the Physical and the Chemical departments of the subject receive attention.

In addition to the use of diagrams, plates, models, etc., every department of the subjects is experimentally illustrated. The experiments are free from elaborate *technique*, and many of them are of a kind susceptible of ready imitation by the student.

Laboratory work for Senior Students:—

(1) During a part of the Session there will be a course on Physiological Chemistry, in which the student will, under direction, investigate food-stuffs, digestive action, blood, and the more important secretions and excretions, including urine. All the apparatus and material for this course will be provided.

(2) The remainder of the Session will be devoted to the performance of such experiments as are unsuitable for demonstration to a large class in the lecture room and such as require the use of elaborate methods, apparatus, etc. The course for first year students is similar to that for senior students, though less advanced, and more attention will be given to the anatomico-physiological aspects of the subject than to the chemical.

HISTOLOGY.

GEO. WILKINS, M.D.

This will consist of a course of ten lectures and twenty-five weekly demonstrations with the microscope. As the demonstrations will be chiefly relied upon for teaching the Microscopic Anatomy of the various structures, the specimens under observation will then be minutely described. Plates and diagrams specially prepared for these lectures will be freely made use of.

COMPARATIVE PATHOLOGY.

J. G. ADAMI, M.D., Professor.

C. F. MARTIN, M.D., Lecturer.

The teaching in Pathology at McGill Medical College includes courses in general and special Pathology, in Bacteriology (held during the summer Session), and instruction in the performance of Autopsies. These courses—while directed especially towards giving to the Students a due knowledge of the causation and course of disease in man—are necessarily based largely upon the results of observations upon the lower animals, and the greater part of all these causes is applicable equally to conditions obtaining in the domestic animals. There is in addition a practical course of Pathological Histology for Students of Comparative Medicine, and instruction is given upon the performance of Autopsies upon the lower animals.*

MEDICINE AND SURGERY.

D. MCEACHRAN, F.R.C.V.S.

Students of all years must attend.

The course embraces the principles and practice of Veterinary Medicine, including the diseases of domestic animals, their nature, causes, symptoms, and treatment. It necessarily includes Pathology and Pathological Anatomy, with daily clinical demonstrations in the hospital and the yard practice of the College, as well as illustrations from plates, preserved specimens, and fresh material furnished by the Pathologist.

The course on Surgery embraces Surgical Anatomy and Practices of Surgery, and will be illustrated by a large collection of surgical appliances.

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* Undergraduates in the second and third sessions are particularly recommended to take the practical course in Bacteriology during the summer session, if possible.

The large and varied practice of the College furnishes abundance of cases for demonstration purposes. Attendance and practical work in the Pharmacy and Hospital is compulsory during the entire course, in the order arranged at the beginning of each Session, and forms an important part of the qualifications for graduation.

ANATOMY.

M. C. Baker, D.V.S.

In this course the Aanatomy of the horse is the subject of special study, while the structural differences of all the domestic animals are carefully explained and illustrated by fresh subjects. There is a very large collection of anatomical models by Dr. Auzoux, of Paris, natural injections and dissections, and a most complete collection of diagrams including Marshall's complete set, Mons. Achille Compte's Anatomical and Zoological series; also a large collection of drawings specially prepared for the school by Mr. Scott Leighton, artist, Boston, and Mr. Hawksett, Montreal.

The dissecting room is open at all hours, subjects are easily procured, and either the Professor or Demonstrator will be in attendance to superintend and direct students in practical dissection. The room is furnished with every convenience, is thoroughly lighted, and affords students all that can be reasonably desired.

Students are required to pay for the material necessary for practical anatomy.

Before a student can be allowed to present himself for his pass examination, he must procure tickets certified by the demonstrator that he has dissected two entire subjects,—that is, one each session.

MATERIA MEDICA AND THERAPEUTICS.

Neil Gunn, M.D., Lecturer.

This course comprises a description of the physiological and therapeutic action of all the more important medicines used in Veterinary Practice, with a short reference to their general properties and principal preparations. It will also include a course in the practical work of compounding and administering medicines in the pharmacy and hospital. There will also be experimental demonstrations of the action of some of the more important drugs on animals.

CATTLE PATHOLOGY AND OBSTETRICS.

C. McEachran, D.V.S.

A special course on Cattle Diseases and Veterinary Obstetrics will be delivered, embracing the history of Cattle Plagues; their nature, symptoms, pathological anatomy, prophylactic and therapeutic treatment; breeding and general management of breeding animals, disease incident to gestation and parturition, etc.

SPECIAL COURSE ON DOGS.

Professor Wesley Mills will give a special course on Dogs, which will include:—

(1.) Lectures on the physical and psychic characteristics of all the leading varieties, illustrated by specimens from his own kennels and other sources, as well as by plates, etc.

(2.) The principles of training; the feeding and general management of dogs.

(3.) The principles of breeding; the management of brood bitches and the rearing of puppies.

(4.) Bench show management and the public judging of dogs.

(5.) The rights and duties of dog owners.

In all the above courses the clinical and pathological aspects of the subject will be considered, as well as the normal.

THE MUSEUM.

Contains a large collection of natural and artificial specimens, consisting of skeletons of almost all the domestic animals, numerous specimens of diseased bones, preparations by Dr. Auzoux of all the different organs in the body, natural dissections, colored models, diagrams, etc., etc., all of which are used in illustrating the lectures, and to which the Students have frequent opportunities of referring. Students will also enjoy the privileges of the Museum of the Medical Faculty of McGill University, which is rich in pathological specimens.

THE PHARMACY.

All the medicines used in the practice of the College are compounded by the Students, under the direction of the Professors, from prescriptions for each particular case, and most of them are administered or applied by them. For this purpose they are detailed for certain pharmaceutical duties alternately. By this means they become familiar with the physical properties, compatabilities, doses and uses of the medicines, and become expert in administering them to the different patients brought for treatment. Attendance and practical work in the Pharmacy are compulsory.

THE PRACTICE.

The Hospital and Daily Clinics, as well as a very extensive outdoor practice, including most of the largest stables in the city and numerous farms in the vicinity, afford excellent opportunities for clinical observation on horses of all breeds and ages. Owing to the numbers of cattle kept in the city, and the valuable thoroughbred herds in the neighborhood, advanced Students are enabled to see

and do considerable cattle practice. The dog practice is the largest in Canada. All canine diseases can be studied clinically, owing to the large number of dogs brought to the College for medical or surgical treatment.

Senior Students will be appointed to act alternately as dressers in the Hospital, and first and second year men must assist in administering medicines and at operations.

*TEXT BOOKS.

The following text books are recommended:—

Anatomy.—Chauveau's Comparative Anatomy; Strangeway's Veterinary Anatomy; McFadyean's Veterinary Anatomy; Dissector's Manual, Clement.

Physiology.—Physiology for Beginners by Foster and Shore; Prof. Mills' Text Book of Comparative Physiology; Class Laboratory Exercises by the same author.

Histology.—Klein's Elements; Schafer's Essentials of Histology.

Botany.—Gray's Structural Botany; Bessey's Botany.

Zoology.—Dawson's.

Chemistry.—Wurtz's Elementary Chemistry; Armstrong; Remsen's Organic Chemistry.

Medicine and Surgery.—Williams' Principles and Practice of Veterinary Medicine; Fleming's Sanitary Science and Police; Williams' Surgery; Fleming's Operative Surgery; Robertson's Equine Medicine; Liautard's Operative Veterinary Surgery; Zuill's Translation of Friedberger and Frôhner's Pathology, etc.

Materia Medica.—Dun's Veterinary Medicines; Walley's Veterinary Conspectus; Tuson's Pharmacy; Hoare's Therapeutics.

Cattle Diseases.—Steel's Bovine Pathology; Clatter's Cattle Doctor (Armitage); Fleming's Veterinary Obstetrics.

Canine Diseases.—Prof. Mills' The Dog in Health and in Disease.

Diseases of the Dog.—Geo. Müller, tr. by A. Glass, V.S.

Entozoa.—Cobbold's Entozoa of Domestic Animals.

Pathology.—Payne's Pathology; Fraenkel's Bacteriology; Clement on Post Mortems.

BOARD AND TRAVELLING EXPENSES.

Board can be obtained at from $15 to $20 per month.

By the kindness of the Railway Companies, certified students of the College will be granted return tickets from Montreal to any part of their lines at greatly reduced rates, the said tickets to hold good from the close of one session to the beginning of the next.

Return tickets will also be granted for the Christmas vacation.

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* Students are advised not to buy text books extensively till after consultation with the Professor who teaches the subject.

VETERINARY MEDICAL ASSOCIATION.

This Association is for the mutual improvement of its members in all matters pertaining to the profession.

Graduates and students of Veterinary Medicine and graduates and students of Human Medicine are eligible to membership.

The meetings are held fortnightly, at which papers are read and discussed, cases reported, etc.

The advantages which students derive from these meetings are very great. Not only do they hear carefully prepared papers on subjects of professional importance, but an opportunity is afforded for practicing public speaking, which in after life is often extremely useful. The fees of the Association are expended in the purchase of books for the Library, drugs for experimental purposes and the prizes awarded for papers read.

The Library is owned by the Association, and is under the control of officers who are elected annually. It contains nearly 600 volumes, embracing works of great antiquity, as well as the modern works on Veterinary Science and collateral subjects, in both the English and French languages, all of which are available for consultation and study by members.

Every student is expected to become a member. The entrance fee is $5, and the yearly subscription $2.50. A Diploma of Honorary Fellowship is conferred on all members who have complied with the regulations of the Association.

ASSOCIATION FOR THE STUDY OF COMPARATIVE PSYCHOLOGY.

This Society is similar in construction to the Veterinary Medical Association, and has a special library of about 100 volumes. Its object is the study of the Psychic Phenomena (intelligence, etc.) of all classes of animals, and the diffusion of sounder views on this subject. Naturally, it is of great importance in the practice of medicine upon dumb animals as well as of peculiar scientific interest.

DONATIONS.

The late John Wesley Gadsden, M.R.C.V.S., of Philadelphia, Penn, U.S.A., generously donated to this Faculty his valuable library of nearly 400 volumes and the specimens of his private museum, many of which are of unusual value.

QUALIFICATIONS FOR THE DEGREE.

Candidates for the Final Examination shall furnish testimonials of attendance on lectures on the following subjects:—

Either Botany or Zoology—One course of six months, 1st year.

Histology,
Chemistry,
Physiology,
Anatomy,
} Two courses of six months, 1st and 2nd years.

General Pathology and Demonstrations, one course of six months.

Cattle Diseases and Obstetrics,
Practice of Medicine and Surgery,
Materia Medica and Therapeutics,
} Two courses, 2nd and 3rd years.

No one will be permitted to become a candidate for examination who shall not have attended at least one full course of lectures in this Faculty, including all the subjects embraced in the curriculum. Courses of less length than the above will be received only for the time over which they have extended.

Students, except by special permission of the Faculty, must pursue the subjects of Anatomy, Physiology, Chemistry, Histology and Botany or Zoology in their first session.

Candidates of the 1st and 2nd years, who fail to pass in not more than two subjects, may be granted a supplementary examination at the beginning of the following session. Supplementary examinations will not be granted, except by special permission of the Faculty and on written application stating reasons, and on payment of a fee of $2, which must be paid prior to examination.

Candidates who fail to pass in a subject of which two courses are required, may, at the discretion of the Faculty, be required to attend a third course, and furnish a certificate of attendance thereon.

In addition to the written and oral examinations, candidates must pass a practical clinical test, including examination of horses for soundness, written reports being required; the clinical reports to include diagnosis, prognosis, and treatment.

The following oath or affirmation will be exacted from the candidate before receiving the degree:—

DECLARATION OF GRADUATES IN COMPARATIVE MEDICINE AND VETERINARY SCIENCE.

I, —— ——, promise and solemnly declare that I will, with my best endeavors, be careful to maintain the interests of this University, and that, to the best of my ability, I will promote its honor and dignity.

EXAMINATIONS.

First Year.—Pass Examinations in Botany or Zoology, Histology (oral), 1st Chemistry, Anatomy, Physiology, and on all other subjects in the course of this year.

Second Year.—Pass examinations in Chemistry, Physiology, Histology (written) and Anatomy, in addition to sessional examinations in these and the other subjects of the year.

Third Year.—Pass Examinations in Practice of Medicine and Surgery, General and Special Pathology, Veterinary Obstetrics, Diseases of Cattle, and Materia Medica and Therapeutics.

N.B.—Written and Oral Examinations will be held from time to time during the session, and attendance at these is compulsory. The standing attained at these examinations will be taken into account at pass examinations.

AGE FOR GRADUATION.

Students under seventeen will be received as apprentices, but cannot be entered as regular Students before attaining that age.

Minors may pass the Examinations, but cannot receive the Diploma until they are twenty-one years of age.

REGULATIONS GOVERNING THE CONFERRING OF THE DEGREE UPON FORMER GRADUATES OF THE MONTREAL VETERINARY COLLEGE.

The Degree of Doctor of Veterinary Science may be conferred on former graduates of Montreal Veterinary College at any Convocation of McGill University held for conferring degrees, subject to the following regulations, which were adopted at a meeting of the Corporation of McGill University, held on the 22nd January, 1890, governing the conferring of Degrees on former graduates :

1st.—That the candidate must be found to have conducted himself throughout his professional career with honor and integrity.

2nd.—That he has not been connected with the manufacture or sale of proprietary medicines.

3rd.—That he has been engaged in actual practice for at least one year since graduating, or that he has been engaged in professional study at some European school.

4th.—That he shall be required to satisfy the Board that he has made reasonable progress in professional knowledge and skill.

In estimating the fitness of a candidate for a degree, account will be taken specially of work done in professional teaching, original research, publication of books or contributions to the journals of the profession.

The fee for the Diploma shall be Twenty Dollars.

An affirmation shall be administered similar to that of other Faculties, and in English.

The Degree may be conferred on absentees.

The regulations relating to fees and affirmations shall apply to ordinary undergraduates on taking the degree.

Graduates intending to apply for the Degree of D.V.S. should notify the Registrar of the Faculty at their earliest convenience, and at the same time state the grounds explicitly on which they base their claims for the Degree.

HINTS TO STUDENTS.

The Matriculation Examination which you have to undergo is by no means a severe one, and if you are not prepared to pass it, you should begin at once to improve your education.

You had better not commence professional reading till you have become familiar with the fundamental subjects. Practice, unless under the guidance of a thoroughly educated practitioner, is more likely to mislead than aid you.

It is advisable that you should arrive in Montreal before the opening day, in order to procure suitable lodgings. Endeavor by all means to be present at the introductory lectures on all subjects; you cannot miss one lecture without thereby losing valuable preparatory information. Come prepared to procure at once the necessary text-books and note books. Make your arrangements so as to enable you to devote your entire time and undivided attention to your studies, as the three sessions which the curriculum covers will be found none too long to accomplish the necessary proficiency in the various branches of study required of you. The McGill Y. M. C. A. is especially recommended to you.

NOTICE TO GRADUATES.

For the purpose of increasing pathological material for the classes, graduates are earnestly requested to send any interesting or obscure pathological specimens which may be met with in their practice to the Pathological Laboratory, McGill Medical College. The specimens may be sent C.O.D. by express, and will in all cases be acknowledged. It is suggested that where reports are desired, those reports can be satisfactory only when the material arrives in the freshest possible condition. It is urged, therefore, that when forwarded in bottles the tissues be placed immediately either in alcohol, fifty to seventy-five per cent., or in a mixture of equal parts of glycerine and water to which five per cent. of pure carbolic acid has

been added. If dry carriage be preferred, the method of surrounding the tissues with a cloth well moistened with one in one thousand corrosive sublimate solution, and wrapping this securely in oiled silk, is recommended. A report upon the nature of the specimen will be sent if desired, and the specimens, when of sufficient interest, will be preserved in the Museum with the names of the donors affixed.

STUDENTS' MEETINGS.

The use of the lecture room or other rooms of the College, for holding students' meetings, can be obtained by application to the Dean, stating the object of the meeting, and he may attend personally or appoint someone to represent the Faculty at said meeting. It is strictly forbidden to hold meetings for the discussion of any subject not approved by the Faculty, and students holding such meetings except as above will be dealt with by the Faculty as it may see fit.

McGill Normal School.

The McGill Normal School, in the city of Montreal, is established chiefly for the purpose of training teachers for the Protestant population, and for all religious denominations of the Province of Quebec other than the Roman Catholic. The studies in this school are carried on chiefly in English, but French is also taught.

Government of the School.

The Corporation of McGill University is associated with the Superintendent of Public Instruction in the direction of the McGill Normal School, under the regulations of the Protestant Committee of the Council of Public Instruction, and it is authorized to appoint a standing committee consisting of five members, called the "Normal School Committee," which shall have the general supervision of the affairs of the Normal School. The following members of the Corporation of the University constitute the committee of the Normal School for the Session of 1899-1900:

NORMAL SCHOOL COMMITTEE.

Prof. W. Peterson, M.A., LL.D., Principal of the University, *Chairman.*
Mr. Samuel Finley, Governor of McGill College.
Rev. Principal MacVicar, D.D., LL.D., } Fellows of
J. R. Dougall, M.A., } McGill University.
Rev. E. I. Rexford, B.A., }
J. W. Brakenridge, B.C.L., *Secretary.*

OFFICERS OF INSTRUCTION.

McGILL NORMAL SCHOOL.

SAMPSON PAUL ROBINS, M.A., LL.D., *Principal and Ordinary Professor of Mathematics and Lecturer on Art of Teaching.*
ABNER W. KNEELAND, M.A., B.C.L., *Ordinary Professor of English Language and Literature.*
MADAME SOPHIE CORNU, *Professor of French.*
MISS GREEN, *Professor of Drawing.*
MR. R. J. FOWLER, *Instructor in Music.*
MISS LILIAN B. ROBINS, B.A., *Assistant to the Principal, and Instructor in Classics.*
MR. W. H. SMITH, *Instructor in Tonic Sol-Fa.*
MR. JNO. P. STEPHEN, *Instructor in Elocution.*
PROF. D. P. PENHALLOW, M.A.Sc., *Lecturer on Botany.*
T. D. REED, M.D., C.M., *Lecturer on Physiology and Hygiene.*
NEVIL N. EVANS, M.A.Sc., *Lecturer on Chemistry.*
MR. JAMES WALKER, *Instructor in Penmanship and Book-keeping.*
MISS LOUISE DERICK, *Instructor in Kindergarten Methods.*
MR. A. W. ARTHY, *Lecturer in the Theory of Kindergarten and Transition Work.*

MODEL SCHOOLS OF THE McGILL NORMAL SCHOOL.

ORRIN REXFORD, B.A.Sc., *Head Master of Boys' School.*
MISS MARY I. PEEBLES, *Head Mistress of Girls' School.*
MISS SELINA F. SLOAN, *Head Mistress of Primary School.*

ANNOUNCEMENT FOR THE SESSION 1899-1900.

This Institution is intended to give a thorough training to teachers, by instruction and training in the Normal School itself, and by practice in the Model Schools; and the arrangements are of such a character as to afford the greatest possible facilities to students from all parts of the province. Hereafter the Protestant Central Board of Examiners for the Province of Quebec will grant diplomas only to teachers-in-training of this Institution and to graduates of British or Canadian Universities.

The forty-fourth Session of this School will commence on

the first of September, 1899, and close on the thirty-first of May, 1900. The students are graded as follows:

1.—*Elementary Class.*—Studying for the Elementary Diploma.

2.—*Advanced Elementary Class.*—Studying for the Advanced Elementary Diploma.

3.—*Model School Class.*—Studying for the Model School Diploma.

4.—*Kindergarten Class.*—Studying for the Kindergarten Diploma.

5.—*Class in Pedagogy.*—Preparing for the Academy Diploma.

Detailed information respecting the courses of the four grades first enumerated above may be obtained on application to the Principal of the School, 32 Belmont Street, Montreal.

ACADEMY DIPLOMAS TO GRADUATES.

All holders of model school diplomas that have been granted by the McGill Normal School or that shall hereafter be granted by the Central Board of Examiners, shall be entitled to receive academy diplomas on graduating in Arts at some Canadian or other British University, provided that they pass in Mathematics, Latin, Greek and French at the degree examinations, or, failing this, in any subject or subjects, pass examinations in such subject or subjects as are certified by the universities to have given to the graduate concerned a standing not lower than that of second class at the close of the second year in Arts.

All graduates in Arts of Canadian or other British Universities who have passed in Mathematics, Latin, Greek and French as above defined, and have taken a course and have passed satisfactory examinations in education and in practical teaching under the control of the universities or of the McGill Normal School as approved by the Protestant Committee of the Council of Public Instruction, shall be entitled to receive academy diplomas. The Central Board of Examiners shall determine who have passed satisfactory examinations in education and in practical teaching in view of the results, which, including examination questions and answers, shall be remitted to the Board by the university examiners, and in view of the recom-

mendations of the professors of education. The Central Board of Examiners is empowered to set one-half of the questions in education, and to prescribe tests of ability to teach and to govern, which must be followed in such examinations.

To meet the requirements of graduates and undergraduates in Arts, who, not having previously taken a Normal School course, desire to receive Academy diplomas, and until the Universities themselves undertake the work, provision has been made for the delivery of a course of lectures on pedagogy in the Normal School and for practice in teaching in the McGill Model School for fifty half days, open to graduates in Arts of any British or Canadian University, to undergraduates of the third year, and with the permission of the Faculty and the concurrence of the Principal of the Normal School, to those of the fourth year. The hours assigned for these lectures are from 3 p.m. to 4 p.m. on each Tuesday and Friday on which lectures are given in the Faculty of Arts. An examination on this course of lectures is held annually on the 20th day of May, or on the school day next succeeding that date; the hours are from 10 a.m. to 12 noon.

Undergraduates will be permitted to teach the fifty half days referred to above, at times extending over the sessions of the Model School, corresponding to the third and fourth years of their college course. Graduates will be permitted to teach in the Model Schools at such times as may be agreed on with the Principal. Those who teach in the Model Schools are expected to prepare all lessons and discharge all duties assigned them with faithfulness. Failure to teach or to govern in the Model Schools, no less than failure to pass the examination on the course of lectures, endangers the Academy Diploma.

Each person taking this course of study in the Normal School shall be held to be subject to the regulations of the said school and to be under the supervision of its Principal while in attendance thereat, and is required to furnish him with all necessary certificates of standing and of good character, as well as to pay to the Secretary of the Central Board of Examiners the fee of $4.00 before receiving an Academy Diploma.

University School Examinations,

1900.

FOR CERTIFICATES OF THE UNIVERSITIES AND THE TITLE OF ASSOCIATE IN ARTS.

HELD UNDER THE SUPERINTENDENCE OF McGILL UNIVERSITY, MONTREAL, AND THE UNIVERSITY OF BISHOP'S COLLEGE, LENNOXVILLE; AND RECOGNIZED BY THE PROTESTANT COMMITTEE OF THE COUNCIL OF PUBLIC INSTRUCTION.

These Examinations are held in Montreal and at Lennoxville; and local centres may be appointed elsewhere on application to the Principal of either University, accompanied with the names of satisfactory Deputy Examiners, and guarantee for the payment of necessary expenses.

The Examinations are open to Boys or Girls from any Canadian school.

PART I.—ORDINARY A.A.

SUBJECTS OF EXAMINATION.

I. PRELIMINARY SUBJECTS.

Writing

English Dictation.

English Grammar, including Easy Analysis.

A Short Essay on a subject to be given at the time of the Examination.

Arithmetic (all the ordinary rules, including Square Root and a knowledge of the Metric System).

Geography (acquaintance with the maps of each of the four continents, and of British North America).

British History and Canadian History.

*New Testament History.** (Gospels and Acts, as in Maclear).

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* Candidates will be exempted from examination in this subject only if their parents or guardians make written objection thereto. In such case Taylor's First Principles of Modern History will be required.

II. Optional Subjects.

Section 1.—Languages.

Latin:—

Cæsar.—Bell. Gall., Bks. I. and II. Latin Grammar. Virgil.—Aeneid, Bk. I. Prose Composition, based on the prescribed prose text, and Easy Translation at Sight.	200 marks.

Greek:—

Xenophon.—Anabasis, Bk. I. Greek Grammar. Prose Composition, based on the prescribed prose text, and Easy Translation at Sight.	200 do.

French:—

French Grammar. Easy translation from English into French, and from French into English. The reproduction in French of an easy narrative read in English.	100 do.

German:

Grammar.—Vandersmissen's Accidence and Syntax, especially the Accidence, including English German Exercises. An equivalent amount of Grammar and English-German translation from any good manual will be accepted instead of Vandersmissen. Joynes' German Reader.	100 do.

Section 2.—Mathematics

Arithmetic:—

As required for Model School Diploma. All ordinary commercial rules, fractions of greater complexity, circulating decimals, cube root, the mensuration of rectangles, circles, rectangular prisms, rectangular pyramids, cylinders, cones, spheres, and all such figures as can be resolved into or referred to these elements. The use of six figure Logarithms.. .. .. 100 do.

Geometry:— Euclid, I., II., III., with easy deductions.. ..	100	do.
Algebra:— Elementary Rules, Involution, Evolution, Fractions, Indices, Surds, Simple and Quadratic Equations of one or more unknown quantities.	100	do.
Plane Trigonometry:— (As in Hamblin Smith, pp. 1-100, omitting Ch. XI.)..	100	do.

Section 3.—English.

The English Language:— West's Elements of English Grammar (Cambridge University Press.) Trench's Study of Words.	100	do.
English Literature:— Stopford Brooke's Primer of English Literature (New Edition.) Shakspere's Richard II. Selections from Tennyson, Part I., (Rowe and Webb, Macmillan.)	100	do.
History.—(As in Primers of Greece and Rome, or Collier's Great Events)..	100	do.

Section 4.—Natural and Physical Sciences, etc.

Physical Geography.—Hinman's Eclectic Physical Geography is recommended..	100	do.
*Botany** (as in Groom's Elementary Botany, with Penhallow's Guide to the Collection of Plants, and Blanks for Plant Descriptions†).. A collection of not more than 50 specimens properly mounted and named will be required of each pupil.	100	do.

* The Head Teacher of each school will forward each pupil's complete collection, and also (on a furnished form) a detailed statement as to the collection.

†These blanks may be obtained from booksellers in Montreal or elsewhere.

Chemistry (as in Remsen's Elements of Chemistry, pp. 1 to 160).. .. .. 100 do.

Physiology and Hygiene (as in Cutter's Intermediate).. .. .. 100 do.

Physics (as in Gage Introduction to Physical Science. Chapters I., II., III., IV. and V.).. .. .. 100 do.

Geometrical and Freehand Drawing.. .. .. 100 do.

Geometrical.—Vere Foster R1 and R2, also problems 119 to 120 of R3, or McLeod's Geometrical Drawing.

Freehand.—Rules of Perspective. Drawing from the object (as in the Dominion Freehand Drawing books, numbers 1 to 5, inclusive.)

The following subjects may be taken instead of *Geometrical Drawing.*

(*a*) Freehand object drawing with shades and shadows.
(*b*) Drawing from the cast.
(*c*) Elementary water color drawing.

REGULATIONS.

1. To obtain the Certificate of Associate in Arts, Candidates must pass in all the Preliminary subjects, and also in any six of the Optional subjects, provided that the six include one subject at least from each of the four sections.

2. In addition to the six Optional subjects selected for passing, Candidates may take other Optional subjects, but the total possible number of marks obtainable in all the Optional subjects chosen must not exceed 1000.

3. Candidates will not be considered as having passed in any subject, unless they have obtained at least 40 per cent. of the total number of marks obtainable in that subject.* A candidate must obtain at least 300 marks on the whole examination.

4. The total number of marks gained by every Candidate in the Optional subjects shall be added up, and the Candidates arranged in order of merit in a printed list at the close of the Examination, those who are over 18 years of age on the first day of June being in a

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* *When two or more books or subjects are prescribed for one examination it is necessary to pass in each.* Candidates will not be allowed to pass in the Preliminary Grammar, unless they show a satisfactory knowledge of Syntax (Parsing, Analysis, and questions connected therewith). In Classics, at least one-third of the marks allotted to Grammar must be obtained.

separate list. The marks in any subject shall not be counted if the Candidate has obtained less than 40 per cent. in that subject.

5. Candidates who obtain at least 75 per cent. of the marks in any Optional subject shall be considered as having answered creditably in that subject, and special mention of the same will be made in the Associate in Arts Certificate.

6. Candidates who pass in the subjects of the University Matriculation Examinations may, without further examination, enter the Faculties of Arts and Applied Science. (See Note 2 *infra.*)

7. Candidates who fail, or who may be prevented by illness from completing their examination, may come up at the next examination without extra fee.

8. Candidates who pass in all the Preliminary subjects may, at any subsequent examination, take the Optional subjects only, and without extra fee.

9. The Head Master or Mistress of each school must certify the character and ages of the pupils sent up for examination.

10. The examination will begin on Monday, June 11th, at 9 a.m.

11. Lists of the names, ages, and Optional subjects to be taken by the Candidates, together with a fee of $4 for each Candidate, must be transmitted to the Secretary, McGill University, Montreal, on or before April 30th. (Blank forms and copies of the regulations will be furnished on application.)

NOTE 1.—No fees will be exacted for the examination of pupils of Academies under the control of the Protestant Committee; but in order to obtain the certificate from the Universities, the prescribed fee, viz., $4, must be paid to the Secretary of the University.

Candidates who pass Grade II. of the Academy Course of Study will be exempted from the Preliminary Subjects of the A. A. Examination.

The answers must be written in the answer book, specially made for the purpose, under the direction of the Board of Examiners.

The complete regulations of the Protestant Committee of the Council of Public Instruction with reference to these examinations may be obtained on application to the English Secretary, Department of Public Instruction, Quebec.

NOTE 2.—MATRICULATION SUBJECTS REFERRED TO IN REG. 6.

In Arts.—(1) Latin or Greek; (2) Geometry; (3) Algebra; (4) Arithmetic; (5) English Grammar; (6) English Dictation; (7)

British History; (8) English Literature; (9) Greek or Latin (if not already taken), *or* two Modern Languages; (10) Botany or Chemistry or Physical Geography or Physics, *or alternatively* a Language not previously taken.

In Applied Science.—Geometry (Euclid, Bks. I. to IV., VI., and definitions of Bk. V.), Algebra, Trigonometry, Arithmetic, English Dictation, Composition, English Grammar, British History, English Literature, and one Language, viz., Greek, Latin, French or German.

(Matriculation Examinations are also held at the opening of the University Session in September. See Calendars of the Universities.)

PART II.—ADVANCED A.A.

SUBJECTS OF EXAMINATION.

I. Preliminary Subjects.

As under Part I.

II. Optional Subjects.

Section 1.—Languages.

Latin:—

Virgil.—Aeneid, I.
Cicero.—In Catilinam, I, and II.
Grammar, Prose Composition (Collar's Practical Latin Composition, Parts III. and IV.), Translation at Sight.

Greek:—

Xenophon.—Anabasis, I. and II.
Homer.—Illiad, IV., and Odyssey, VII.
Translation at Sight.
Grammar and Prose Composition (Abbott's Arnold's Greek Prose Composition, Exercises 1 to 25).

French:—

Le Livre de mon Ami, by A. France.
Molière, Le Bourgeois Gentilhomme.
Translation at Sight from French into English, and from English into French.
Grammar and Dictation.

German:

Lessing, Emilia Galotti.
Schiller, Der Kampf mit dem Drachen.
Grammar and translation from English into German.

Section 2.—Mathematics.

Geometry:—

Euclid, Bks I. to IV., Defins. of Bk. V., Bk. VI.

Algebra:—

To the end of Progressions.

Trigonometry:—

As in Hamblin Smith (the whole).

Section 3.—English.

The English Language:—

Lounsbury's History of the English Language.
Cook's First Book of Old English (Ginn, Boston), Extr. XIII. inclusive, with grammatical questions arising therefrom.
Chaucer's Prologue to the Canterbury tales, (Skeat, Clarendon Press.)
A Composition.

English Literature:—

The Elizabethan Period (Morley's First Sketch, Herford's Age of Woodsworth (Bell), Pope's Essay on Criticism (Churton, Collins, Macmillan), Milton's Paradise Lost, Bk. I.

History:—

Grecian History.—The Persian and Peloponnesian Wars.
Roman History.—From the Wars of Marius and Sulla to the death of Tiberius.
English History.—The Reformation and Puritan England, as in Green's Short History.

Section 4.—Natural and Physical Sciences, etc.

Botany:—Gray's Text-Book of Structural Botany.
General Morphology and Classification, Determination of Canadian Species, exclusive of Thallophytes. Distribution of Orders represented in Canada.
Credit will be given for collections of plants as under Part I.

Chemistry:—Inorganic, as in Remsen's Elements.

Also, an examination in Practical Work (to be held only in Montreal and at Lennoxville.)

Physics:—As in Gage and Fessenden's High School Physics.

Also, an examination in Practical Work (to be held only in Montreal and Lennoxville.)

Drawing:—Orthographic Projection, including Simple Penetrations, Developments and Sections, as in Davidson's Orthographic Projection.

REGULATIONS.

The Regulations of Part I, with the following modifications and additions, will apply to the advanced subjects:—

1. Candidates who pass in six of the advanced subjects, including one at least from each of the four Sections, will receive an Advanced A. A. certificate. The number of marks given to each subject will be the same as in Part I., and additional advanced subjects may be taken as in Reg. 2, Part I.

2. Candidates who fail in one or more of the subjects required for the advanced A. A. may, on the recommendation of the Examiners, be given an ordinary A. A. certificate.

3. The examinations in the advanced subjects will be held at the same time and in the same manner as those in the ordinary subjects. They will be open to all who have already passed in the preliminary subjects, whether they have taken the ordinary A. A. or not. The preliminary subjects must be taken either one or two years before the advanced subjects.

4. Candidates must, before April 30th, give notice of intention to present themselves for the examination, specifying the optional subjects in which they wish to be examined.

5. The ordinary fee of $4.00 must be paid before taking the preliminary subjects, and an additional fee of $10 at the time of making application for the advanced Examination.* A Candidate who fails to pass the Advanced A. A. Examination shall be required to pay a fee of $5 for every subsequent Advanced A. A. Examination at which he may present himself.

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* Candidates from Academies under the control of the Protestant Committee of the Council of Public Instruction are exempt from the former fee, but not from the latter.

LIST

OF

SUCCESSFUL CANDIDATES

RESULTS OF EXAMINATIONS, 1899.

ASSOCIATES IN ARTS.

I. *Under* 18 *Years of Age.*

No.		Marks.
32	Elizabeth Helen Lundie (High School for Girls, Montreal),	864
17	Arthur Reginald Roberts (The High School, Montreal),	828
27	Jean Purdie Dease (High School for Girls, Montreal),	803
142	Maria Claribel Taylor (Sherbrooke Academy),	792
14	Orick Burroughs McCallum (The High School, Montreal),	789
147	Walter Joseph Healy (St. Francis College Grammar School),	783
13	Gerhard Richard Lomer (The High School, Montreal),	779
2	Frederick Baylis Brown (The High School, Montreal),	760
5	Guillaume Casimir Couture (The High School, Montreal),	758
132	Abraham Pinto Joseph (High School, Quebec),	739
15	Frederick Alexander McKay (The High School, Montreal), } equal	722
25	Gertrude Barbara Cayford (High School for Girls, Montreal), }	
37	Catherine Isabella MacKenzie (High School for Girls, Montreal),	718
29	Margaret Frances Hadrill (High School for Girls, Montreal),	714
104	Ruth Hunter (Lachute Academy),	711
129	William Snaith (High School, Quebec),	691
18	William Whitford Robinson (The High School, Montreal),	685
6	William Flockart Drysdale (The High School, Montreal),	680
9	Ernest George Gnaedinger (The High School, Montreal),	671
28	Gladys Marjorie Fenwick (High School for Girls, Montreal), } equal	664
143	Ray Forester Waterhouse (Sherbrooke Academy), }	
92	Robert H. McCracken (Huntingdon Academy), } equal	663
201	Herbert Jennings Rose (Private Tuition), }	
98	William K. Philps (Huntingdon Academy),	649
161	Alice Sarah Newton (Waterloo Academy),	639
141	Herbert Arthur Sampson (Sherbrooke Academy),	638
38	Dakers Cameron (Abingdon School, Montreal),	636
1	William Ernest Baker (The High School, Montreal),	641

No.		Marks.
156	Aline Lydre Charbonnel (Waterloo Academy),	633
157	Ethel May Cook (Waterloo Academy),	630
199	Frances H. Garland (Mansonville Model School),	629
35	Helen Louise McDonnough (High School for Girls, Montreal),	628
42	Eric MacKay (Abingdon School, Montreal),	626
164	Laura Allen Payan (Waterloo Academy),	620
34	Georgiana McBain (High School for Girls, Montreal),	613
17	Edward Warwick Pownall (The High School, Montreal),	602
140	Genevra May Pennoyer (Sherbrooke Academy),	597
33	Matilda Mason (High School for Girls, Montreal),	596
3	Jacob Simon Budyk (The High School, Montreal),	585
69	Rachel M. M. Stevens (Compton Ladies' College),	584
26	Bessie Craig (High School for Girls, Montreal), } equal.	583
163	David Herbert Parmelee (Waterloo Academy), }	
167	Robert Harvie (Westmount Academy),	580
68	Annie Knight Harding (Compton Ladies' College),	577
24	Mamie Bray (High School for Girls, Montreal),	573
23	Julia Ainslie (High School for Girls, Montreal),	566
152	Bessie Harriet Cook (Sutton Academy),	561
105	Margaret Elizabeth Jackson (Lachute Academy),	559
97	Lily L. Pringle (Huntingdon Academy),	557
21	William Horseman Thorpe (The High School, Montreal),	555
66	Reginald Daryl Lake Denne (St. Alban's School, Berthier),	548
79	Constance Cleveland Bonneville (Danville Academy),	543
108	Ethel A. V. Mallory (Lennoxville Academy), } equal.	539
130	Allan McDonald Strang (High School, Quebec, }	
180	William A. Lincoln (Stanstead Wesleyan College),	534
49	Harriet Evelyn Armstrong (Miss Symmers' and Miss Smith's School, Montreal),	509
137	Gertrude Advina Hallett (Sherbrooke Academy),	503
153	Archie McEachen Phillips (Gault Institute, Valleyfield),	495
145	Hannah Mabel Ewing (St Francis College Grammar School),	485
89	Gracia A. E. Chambers (Huntingdon Academy), } equal.	483
165	Muriel Brodie (Westmount Academy), }	
71	Edward Bailey (Cookshire Academy),	481
109	Eva G. Mallory (Lennoxville Academy),	466
87	Agnes W. Boyd (Huntingdon Academy),	465
73	Persis Coates (Cookshire Academy),	464
138	Carrie Helen Hovey (Sherbrooke Academy), } equal.	459
170	Katie E. McLeod (Westmount Academy), }	
136	Bertha Mary Edwards (Sherbrooke Academy).	457
168	Florence M. Hersey (Westmount Academy), } equal	456
100	Grace Fortier (Inverness Academy), }	
172	Amy Webster (Westmount Academy),	451
72	Lydia Boyd (Cookshire Academy), } equal.	450
101	Alice Ball (Knowlton Academy), }	

No.		Marks.
91	Mary A. Hampson (Huntingdon Academy),	447
111	Louis Douglas Meyers (Ormstown Academy),	443
134	Harold Trotter (St. Johns High School),	442
125	George Gordon Gale (High School, Quebec),	440
187	Blanche Sutherland (Paspebiac Model School),	435
160	Fenwick Arthur Newall (Waterloo Academy),	433
7	William Maxwell Duckett (The High School, Montreal),	430
85	Helena Chalmers (Granby Academy),	407
154	James Scott Thompson Wishart (Gault Institute, Valleyfield),	403
8	Alan Colquhoun Blackburn Dunlop (The High School, Montreal),	386
83	Lucy May Stockwell (Danville Academy),	382
30	Ethel Wilhelmina Hostler (High School for Girls, Montreal),	377
103	Bertha Woods (Knowlton Academy),	367
171	Ethel M. Ross (Westmount Academy),	362
70	Evelyn Bailey (Cookshire Academy),	356

2. *Over* 18 *Years of Age.*

197	Charles Edward Bowker (Mansonville Model School),	739
158	Charlotte Leslie Crowther (Waterloo Academy),	726
95	William D. McNaughton (Huntingdon Academy),	722
186	Alvin Burton (Dufferin Grammar School, Brigham, P.Q.),	710
200	William A. Saunders (Mansonville Model School),	702
174	John McLeish (Private Tuition),	677
31	Lily Ernestine Idler (High School for Girls, Montreal),	671
53	Helen Ivy Louise Gardner (Miss Symmers' and Miss Smith's School, Montreal),	655
11	Walter Seely Johnson (The High School, Montreal),	650
96	Edward E. Mowatt (Huntingdon Academy),	627
77	Edna Blanche Abercrombie (Danville Academy),	601
93	Peter A. McFarlane (Huntingdon Academy),	592
56	Madge Ednah Lacy (Miss Symmers' and Miss Smith's School, Montreal),	570
76	Ethel Alma Abercrombie (Danville Academy),	568
175	Samuel John Bridgette (Stanstead Wesleyan College),	547
4	Harris Cohen (The High School, Montreal),	
88	Susan M. Carr (Huntingdon Academy),	539
106	James Henry Mason (Lachute Academy),	536
67	M. Hilda Hamilton (Compton Ladies' College),	526
179	Richard Watson Graham (Stanstead Wesleyan College),	522
90	William H. Fraser (Huntingdon Academy),	513
139	Idonea Ruth Boyd Nourse (Sherbrooke Academy),	480
78	Emily Adams (Danville Academy),	473
196	Mary Johnson (Magog Model School),	464
107	Lizzie C. Dundin (Lennoxville Academy),	460

No.		Marks.
84	Eva L. Allan (Granby Academy), } equal	458
110	Charlie M. Smith (Lennoxville Academy), }	
19	Warren Simister (The High School, Montreal),	451
36	Euphemia Laurence McLeod (High School for Girls, Montreal),	445
144	Edward Johnson Witty (Sherbrooke Academy), } equal	442
162	Amos Sargeant Newton (Waterloo Academy), }	
75	Harold Taylor (Cookshire Academy),	421
149	Lydia Jane Shaw (St. Francis College Grammar School),	418
150	Jessie Mary Varney (St. Francis College Grammar School),	381
50	Ruby Butler (Miss Symmers' and Miss Smith's School, Montreal),	317

PASSED THE PRELIMINARY SUBJECTS.

(In order of number.)

39	40	41	43	44	45
47	52	54	55	59	60
61	112	113	114	115	116
117	119	120	122	124	126
148	173	189	192	193	210
212	215	216	217	218	222
223	224	225	226	227	230
231	233	234	235	236	237
239	240	241	242	243	244
245	248	249	250	251	252
255	256	257	261	262	263
264	268	269	273	276	278
282	283	285	286	287	288
289	290	291	292	293	294
295	296	297	298	299	300
301	302	303	305	307	308
310	311	312	313	314	315
316	317	318	319	320	321
322	324	326	328	335	336
338	341				

The following candidates have passed the Examinations required for Entrance.

A.—In Arts.

1. FOR COURSE LEADING TO B.A.

Ainslie, Julia,	Montreal
Belyea, Edith,	St. John, N.B
Blanchet, Sydney H.,	Ottawa, O
Bray, Mamie,	Montreal
Burpee, Ethel L.,	Vancouver, B.C.
Campbell, Jessie L.,	Vancouver, B.C.
Cayford, Gertrude B.,	Montreal
Chipman, Wm. W.,	Ottawa, O
Couture, Guillaume C.,	Montreal
Davidson, MacFarlane B.,	Ottawa, O
Dease, Jean Purdie,	Montreal
Domville, Elizabeth,	St. John, N.B.
Doran, Leo Patrick,	Kingston, O
Dudley, Robert L.,	Pembroke, O
Dutaud, Gustave,	Montreal
East, Edith,	Montreal
Eby, Florence M.,	Vancouver, B.C.
Fenwick, Gladys M.,	Montreal
Fripp, George D.,	Ottawa, O
Gardner, Helen I. L.,	Montreal
Hadrill, Margaret F.,	Montreal
Hannington, John W. B.,	Victoria, B.C.
Harris, Alan Dale,	Ottawa, O
Harvie, Robert,	Westmount, Q
Johnson, Walter S.,	Montreal
Lomer, Gerhard R.,	Montreal
Lundie, Elizabeth H.,	Montreal
McCallum, Orick B.,	Montreal
McCracken, Robert H.,	Huntingdon, Q
McConaghy James A.,	Vancouver, B.C.
McFarlane, Peter A.,	Huntingdon, Q
McKay, Eric,	Montreal
McLeish, John,	Montreal
McNaughton, Wm. D.,	Huntingdon, Q
Mowatt, Edward E.,	Huntingdon, Q
Munroe, George A.,	Dunvegan, O
Munroe, H. Edwin,	Dunvegan, O
Newton, Alice S.,	Waterloo, Q
Paul, Margaret A.,	Vancouver, B.C.
Phillips Alex. May,	Vancouver, B.C.
Philips, Wm. K.,	Huntingdone Q
Pownall, Edward W.,	Montreal
Redpath, Wm.,	Montreal
Robinson, Wm. W.,	Montr, al
Rose, Herbert J.,	Ottawa O
Summers, Albert V.,	Pembroke, O
White, Samuel C.,	Ottawa, O

2. FOR COURSE LEADING TO B.SC.

Abercrombie, Edna B.,	Danville, Q
Abercrombie, Ethel A.,	Danville, Q
Allan, Eva L.,	Granby, Q
Armstrong, Harriet E.,	Montreal
Ball, Alice,	Knowlton, Q
Bonneville, Constance C.,	Danville, Q
Bowker Chs. E.,	Mansonville, Q
Bridgette, Samuel J.,	Stanstead, Q
Brodie, Muriel,	Westmount, Q
Burton, Alvin,	Brigham, Q
Chalmers, Helena,	Granby, Q
Charbonnell, Aline L.,	Waterloo, Q
Crowther, Charlotte L.,	Waterloo, Q
Cook, Ethel M.,	Waterloo, Q
Duckett, Wm. M.,	Montreal
Dundin, Lizzie C.,	Lennoxville, Q
Dunlop, Alan C. B.,	Montreal
Edwards, Bertha M.,	Sherbrooke, Q
Ewing, Hannah M.,	Richmond, Q
Fortier, Grace,	Inverness, Q
Garland, Florence H.	Mansonville, Q
Hallett, Gertrude A.,	Sherbrooke, Q
Hamilton, M. Hilda	Compton, Q
Harding, Annie K.,	Compton, Q
Hersey Florence,	Montreal
Hunter, Ruth,	Lachute, Q
Idler, Lily E.,	Montreal
Jackson, Margaret E.,	Lachute, Q
Laing, Campbell	Montreal
Lincoln, Wm. A.,	Stanstead, Q
McBain, Georgiana,	Montreal
McDonough, Helen L.,	Montreal
McKenzie, Catherine I.,	Montreal
McLeod, Euphemia L.,	Montreal
McLeod, Katie E.,	Westmount, Q
Mallory, Ethel A. V.,	Lennoxville, Q
Mallory, Eva G.,	Lennoxville, Q
Mason, James H.,	Lachute, Q
Mason, Matilda,	Montreal
Newall, Fenwick A.,	Waterloo, Q
Newton, Amos S.,	Waterloo, Q
Nourse, Idonea R. B.	Sherbrooke, Q
Parmelee, David H.,	Waterloo, Q
Payan, Laura A.,	Waterloo, Q
Pennoyer, Genevra M.,	Sherbrooke, Q
Pringle, Lily L.,	Huntingdon, Q
Saunders, Wm. A.,	Mansonville, Q
Shaw, Lydia J.,	Richmond, Q
Simister, Warren,	Montreal
Smith, Chas. M.,	Lennoxville, Q
Stevens, Rachel M. M.,	Compton, Q
Stockwell, Lucy M.,	Danville, Q
Taylor, Maria C.,	Sherbrooke, Q
Webster, Amy,	Westmount, Q

B.—In Medicine.

English John M.,	Vancouver, B C.
Gale, W. P.,	Quebec
Goldie, Thomas L.,	Toronto, O
McDonell, John J.,	Williamstown, O
Nelson, James S.,	Ottawa, O
Slack, Malcolm R.,	Brigham, Q

C.—In Applied Science.

Baker, Wm. E.,	Montreal
Barclay, Malcolm M.,	Montreal
Brown, Frederick E.,	Montreal
Cohen, Harris,	Montreal
Denne, Reginald D. L.,	Berthier, Q
Drysdale, Wm. F.,	Montreal
Foreman, Alvah E.,	Vancouver, B.C.
Gault, A. Hamilton,	Montreal
Gnaedinger, Ernest G.,	Montreal
Graham, Richard W.,	Stanstead. Q
James, Bertram,	St. John's, Nfld.
Jones, Harold W.,	Ottawa, O
Langley, Albert G.,	Victoria, B.C.
McKay, Frederick A.,	Montreal
Musgrave, Wm. N.,	Victoria, B.C.
Roberts, Arthur R.,	Montreal
Robertson, Alex. R.,	Victoria, B.C.
Scouler, Guy T., N.	Westminster, B.C.
Sewell, John E. T.,	St. Catharines, O
Sims, Harold H.,	Lennoxville, Q
Thorpe, Wm. H.,	Montreal
Trimingham, Chas. L.,	Montreal
Webster, George B.,	Ottawa, O

STANDING IN THE OPTIONAL SUBJECTS.

The numbers correspond with those in the preceding lists. Candidates whose numbers are in parentheses are equal in standing. Those preceding a single asterisk have obtained at least three-fourths of the marks; those preceding a double asterisk, at least one-half; those following, at least forty per cent. The numbers of the Schools and Candidates are as follows: Montreal High School (Boys'), 1 to 22, 210 to 281; Montreal High School (Girls'), 23 to 37, 282 to 328; Abingdon School, 38 to 48; Miss Symmers' and Miss Smith's, 49 to 57; St. Ann's School, Montreal, 58 to 61; Aylmer Academy, 62 to 64; Bedford Academy, 65; St. Albans School, Berthier, 66; Compton Ladies' College, 67 to 69; Cookshire Academy, 70 to 75; Danville Academy, 76 to 83; Granby Academy, 84 to 86; Huntingdon Academy, 87 to 98; Inverness Academy, 99 and 100; Knowlton Academy, 101 to 103; Lachute Academy, 104 to 106; Lennoxville Academy, 107 to 110; Ormstown Academy, 111; Girls' High School, Quebec, 112 to 123; Boys' High School, Quebec, 124 to 132; St. John's High School, 133 and 134; Sherbrooke Academy, 135 to 144; St. Francis College School, 145 to 151; Sutton Academy, 152; Gault Institute, Valleyfield, 153 and 154; Waterloo Academy, 155 to 164; Westmount Academy, 165 to 174; Williamstown High School, 173: Stanstead Wesleyan College, 175 to 185; Private Tuition, 174 and 201; Dufferin Grammar School, 186; Paspebiac Model School, 187; St. Andrew's School; Annapolis Royal N. S., 188 to 195; Magog Model School, 196; Mansonville Model School, 197 to 200; Sawyerville Model School, 202 to 203; Portage du Fort Model School, 204 and 209; Senior School, Montreal, 329 to 344; Trafalgar Institute, 345 to 347; The Misses Bartley's School, 348 to 349a.

Latin.—186, 32, (27, 158), 2, 13, 68,* (18, 37), 104, (25, 147), 201, 16, 14, 161, (17, 174), (29, 69), (5, 28), 95, 111, 132, 196, 23, (141, 143), (77, 98, 200), (3, 11, 15, 175), 12, 144, 26, (42, 189), 142, (93, 105, 163), 92, (9, 183), 38, 30, 106, (1, 197), (79, 90, 107, 157, 199),** 130, (78, 89, 97), 34, 67, (24, 53, 76, 149),.(19, 96, 162), 152, 100, (56, 145), (109, 170), (129, 167, 179), 164, 101, 140.

Greek.—32, 27,* 14, 25, 147, 13, 29, 16, 23, 132, 5, (18, 95), 174, 98, 92, 42, 11,** (129, 201), 161, 96, 3, 130, 175, 93, 26.

French.—5, 13, 164, 186, 56, 129, 132,*(130, 147), (18, 38) (27, 49), (2, 53), 32, (37, 68, 156, 161), 84, (14, 29, 158), 42, 76, (8, 23, 153), (51, 67, 95, 134, 201), (12, 28), (21, 50, 143), (69, 150), (3, 11, 25, 31, 165), 73, (85, 125, 137, 140, 149), (35, 72, 77, 93, 141), (4, 89, 104, 136), (91, 138, 163),** (6, 9, 24, 157), (17, 71, 97), (15, 70, 76, 154, 174), (33, 92), (26, 139, 167), (75, 79, 101), (1, 19, 96, 98, 111, 171), (34, 85, 145), (7, 100, 103, 152, 160) (36, 65, 83, 88, 105, 110, 144, 170, 180, 199).

German.—153, 3, 28, 31, (35, 53),** 24, 167, (49, 172), 165.

Optional Arithmetic,—(61, 197, 200), 88, 6, 77, 75,* 72, 38, (80, 91), 138, 78, 90, (63, 74, 104), 73, (71, 81, 87, 94, 97), 135, 106,** (108, 199), (79, 137), 70, 89, (60, 64), (76, 103).

Geometry.—17, (14, 15, 21, 42, 166, 180), 149, (9, 18, 22, 32, 37, 150), 156, (1, 4, 6, 29, 38, 88, 129, 134, 147, 167, 168, 174, 186, 199), 157, (5, 7), 142, (8, 69, 110), (31, 78, 94, 96, 99, 179), (95, 187), 11, (81, 89, 98, 108, 161), (2, 26, 34, 53, 70, 77, 84, 87, 92, 93, 97, 137, 143, 158, 165, 172, 203), 201, (3, 24, 25, 102, 130), (16, 49, 64, 71), (36, 72, 73, 125, 163), (13, 23), (19, 27, 28, 35, 67, 79, 80,

100, 106, 184), (103, 160),* (33, 91, 136), (75, 109, 111, 162), (101, 104, 138, 140, 141, 144, 153, 171, 177, 181, 183, 189, 197), 68, (90, 164, 178), 132, (83, 85, 139, 155), (63, 145, 154, 200), (105, 152, 185), (12, 175), (30, 76, 176), 173, (74, 135, 193, 198, 204), 107, (59, 151), 202, 192, ** (61, 170, 188).

Algebra.—(9, 17, 32), (14, 141), 104, 13, (15, 157), (129, 132), (147, 166,) 88, 79, (27, 199,) (12, 179), (4, 73), 125, (38, 186), 29, (105, 142), (22, 140, 173, 183), 5,* (2, 35), 33, 187, (163, 196), (1, 49, 85, 98, 109), 164, (28, 84, 92, 95, 134, 175), (150, 155, 201), 143, (138, 145, 161, 171), (53, 67, 71, 185, 197), (99, 108), (8, 42, 65), 137, (23, 69, 77, 96, 107, 165), (7, 97, 100, 106, 158), 139, (25, 31, 68), (72, 130, 152, 189), (156, 167), 180, 93, (21, 76, 174), (37, 154, 200), (3, 18, 51, 162),** (176, 181, 184), (56, 64, 70, 80), (16, 61, 87, 91, 110, 111), (81, 90, 170), (6, 60, 103, 136, 149, 198), 75, (24, 36, 74, 89, 94, 160), (101, 135, 153, 168, 178), (11, 19, 34, 50, 78, 83, 172, 193, 195).

Trigonometry.—(38, 95), 96, 92, 17, 129, 141, 142, 132, (6, 179), (4, 9, 12, 98), (125, 147),* 2, (15, 93), 42, (21, 166), 143, 1, (7, 8).**

English Language.—27, (25, 32), (31, 56), 29, 53, (35, 33), 28,* 37, 26, 36, 24, 153, (34, 49, 51), 2, 22, (156, 193), (11, 50), 14,** 30, 16, 189, 152, 18.

English Literature.—(27, 37), 13, (25, 32, 33, 158),* (90, 96), (53, 95, 201), (5, 92, 104), (29, 56, 142), (14, 17, 174), (2, 28), 186, (12, 22, 83, 105, 164), (1, 64, 100, 196), (31, 34, 42, 76, 163), (19, 91, 180), (21, 24, 69, 106, 172, 187), (4, 6, 11, 26, 49, 135, 161, 167), (16, 30, 68, 98, 200), 35, 79, 93, 157), (9, 137), 168, (23, 88, 177, 197), (18, 136, 162, 166), (77, 97, 175, 202), (99, 140, 170),** 156, (7, 84, 87, 110, 139, 179), 67, (15, 151, 199), (145, 149), (8, 63, 138, 160), (82, 102, 107, 103, 198), (101, 173, 185), (78, 85, 155, 171), (36, 50, 71, 73, 75, 94, 103, 108, 134, 165, 184, 193).

Optional History.—197, (2, 14, 31, 203), 5, 132, (13, 174), (17, 129), 199, (33, 172), (6, 130), 165, 69, (125, 175), 11, 19, (7, 21), 180, (42, 53, 56), (9, 30, 67, 145, 170), (35, 52), (1, 166), (15, 22, 167), 171, (34, 168), (16, 50), 68, 4, 72, 49, 51, 177, 3, (71, 101, 181), (102, 150, 185, 187), (151, 136), (18, 184).

Physical Geography.—142, 197, 110, 187, (87, 136, 138), (89, 147), (15, 71, 91, 111, 202), (60, 156), (64, 97, 140, 152, 189), (49, 134, 139, 155, 203), (90, 108), (107, 160, 173, 200), 88, 109,* (11, 63, 143), (85, 196), (76, 94, 100, 102, 178), (103, 137), (153, 158), (73, 84, 157), 78, (75, 144, 154), 164, (77, 101), (163, 189, 193, 199), 38, (72, 192), (141, 161), 195, 70, 68, 162, (83, 99, 188), ** 65.

Botany.—174, 142, 32, 53, 49, (50, 104),* 56, 110, 158, 68, 156, (105, 108, 152, 157), (29, 31, 136), 106, 37, (69, 85, 109), (25, 28, 84,), (34, 51), 161, 164, 150, 139, (35, 36, 135,) (143, 145), (26, 67, 137, 140), 76,** (33, 160), (24, 162), 107, (65, 155), (83, 149), (144, 202).

Chemistry.—1, (32, 34), (17, 27), 167, (25, 168), (35, 147), (8, 24, 26), 7, (172, 186), * (2, 12, 33, 201), 37, (23, 29), (4, 165, 166), 6, (15, 145, 150), (9, 28, 31,) 170, 42, 100, 21, (38, 64, 99), ** 188, (30, 193), (36, 149, 151).

Physiology and Hygiene.—64, (87, 88), 77, 76, (11, 80), 90, (136, 142, 187), 171, (73, 92, 94, 95, 97, 125), 96, (5, 93, 105), (132, 137, 138, 140), (72, 75, 79, 89, 108, 158, 168), (98, 143, 153), (78, 133, 152), (3, 144, 196, 197), (70, 107, 199), (83, 106, 110, 141, 164, 172),* (104, 130), (156, 162), (59, 67, 129, 186), (63, 71, 91, 154), (61, 170), 81, (74, 111, 135, 155, 165, 198, 203), (84, 163, 166, 183, 202), 161, 182, (160, 184), (101, 134, 177, 180), 176, (68, 103), (157, 179), (109, 167, 178), 69, (85, 200) 102, (65, 204),** 181, 60.

Physics.—(197, 200), 175, (17, 180), (14, 179, 184, 186), * 201, 13, 185, 173, 15, 6, ** 18, 154, (1, 153), 99, (16, 21, 22).

Drawing.—36, (17, 32), 15, 6, (13, 19),* 27, (2, 37), (14, 21, 34), 104, 18, 9, 4, (1, 31), (29, 33), 105, (24, 168), ** (5, 25) 106, 35, 203, 156, (26, 134), 22, 28.

Passed the University Examinations.

SESSION 1898-99.

FACULTY OF LAW.

PASSED FOR THE DEGREE OF B.C.L.

(In order of merit.)

Lynch, W. H., Mansonville, Que
Drolet, E. B., B.A. (Laval), Montreal
Saunders, F. C., Montreal
Décarie, J. N. F., B.A., Notre Dame de Grâce, Que
Ives, W. C., Macleod, Alberta
McIver, W. E., Melbourne, Que
Carter, W. F., B.A.Sc., Cowansville, Que
Ball, W. S., East Bolton, Que
Vipond, E. E., Montreal
Semple, G. H., B.A. (Laval), Montreal
Thorneloe, W. E. G., B.A, Montreal

FACULTY OF MEDICINE.

PASSED FOR THE DEGREE OF M.D., C.M.

(Arranged alphabetically.)

Alley, G. T., Charlottetown, P E.I
Aylmer, A. L., Melbourne
Bowles, C. T., Ottawa, Ont
Brown, W. F., B.A., Plattsburg, N.Y
Browning, W. E., Exeter, Ont
Burnett, W. B., B.A., Sussex, Ont
Burris, J. S., Halifax, N.S
Cameron, L. G., Cascades, Que
Casselman, P. C, Morrisburg, Ont
Craig, J. E., North Gower, Ont
Cumming, W.A., Buckingham, Que
Darche, C. E., Danville, Que
Drier, N. E., Woodstock, N.B
Dyer, E. O., B.A., Sutton, Que
Fawcett, R. F. M., Jamaica, W.I.I
Fitzgerald, C. T., Harbor Breton, Nfd
Francis, B., Sydney Mines, N.S
Fuller, G. F. LeR., Sweetsburg, Que
Galbraith, W. S., Lethbridge, N.W.T
Gillis, E. G., Indian River, P E.I
Gordon, A. H., St. John, N.B
Gray, C. F. A., Montreal
Greene, E., Leitrim, Ont
Higgins, C. P., Victoria, B.C
Jackson, F. S., Westmount, Que
Jones, F. B., Montreal
Jones, D. C., Maitland, Ont
Law, R., Ottawa, Ont
Levy, A., B.A., Montreal
Lineham, D. M., Calgary, N W.T
Loeb, A. A., Montreal
Logie, A. E., Chatham, N.B
Love, R. H., Carleton Place, Ont
Macdonald, J. S., Montreal
Mackenzie, C. A, Toronto
McCombe J., Dublin, Ireland
McKay, J. G., Morewood, Ont
McIntyre, J. D., Clifton, P E.I
McKechnie, W. C., Marquette, Man.
McNally, D A., Abram's Village, P.E.I
McNaughton, F. M. A., B.A., Huntingdon, Que
McNiece, T. G., Carsonby, Ont
Morris, T E, St. John, N.B
Murphy, E. F., St John, N.B
Nash, A. C., Ogdensburg, N.Y
Nicholson, F. J., B.A., Victoria, B.C
O'Brien, J. R., B.A., Ottawa, Ont
Peppers, H. W., B.A., Fredericton, N.B
Phelps, S. E., Steuben, Me., U.S.A
Rajotte, E. C. F., Montreal
Ross, S. A., Hintonburg, Ont
Rutherford, R. M., Hawkesbury, Ont
Ryan, G. H. W., Montreal
Scott, J. F., Montreal
Shore, R.A.A., B.A., Toronto
Sutherland, W. H., Sea View, P E.I
Thompson, G. H., North Sydney, N.S
Tooke, F. T., B.A., Montreal
Trites, C. B, Petitcodiac, N.B
Turnbull, T., Stratford, Ont
Whillans, H. A., Nepean, Ont
Wilkins, W. A., Montreal
Witherbee, W. D., Postdam, N.Y
Woodley, J. W., Rockland, Ont

FACULTY OF ARTS.

PASSED FOR THE DEGREE OF B.A.

In Honours.

(Alphabetically arranged.)

First Rank.—Brown, Walter G.
Ells, R. Hugh.
Finley, Kathleen E.
Henderson, Ernest H.
Holiday, Annie.
Keith, Henry J.
MacLeod, John B.
McClung, Robert K.
Patch, Frank S.
Rice, Horace C.
Robertson, Lemuel.
Scrimger, Anna M.
Wainwright, Arnold.

Second Rank.—Hardisty, Richard H. M.
King, Christina C.
Laurie, Ernest.
McDougall, Louise.
McGill Winifred.
Potter, Lucy E.
Reid, Lena McK.
Thompson, J. E.

Ordinary B.A.

(In order of merit.)

Class I.—Cotton, C. M.

Class II.—Seifert, F. H. (*Morrin*)
Johnson, H.
Heeney, W. B.
Macdonald, P. A.

Class III.—Radford Janet.
Armstrong, C.
Cumming, W. G.
Hurst, I. M.
Lundie, J. A.
Brodie, M. }
Jackson, Emma, (*Morrin*) }
Holland, T. B. }
Munroe, T. A. }
Reynolds, L. E. Maude.

Æger.—Bruce, Guy O. T.
Mackay, Hector.

STUDENTS IN ARTS REGISTERED IN THE MEDICAL FACULTY ON WHOM THE DEGREE OF B. A. WAS CONFERRED IN JUNE ON COMPLETING THEIR MEDICAL YEAR.

(*In alphabetical order.*)

DIXON, W. E.
GARDNER, R. L.
GOODALL, J. R.
JOHNSON, R. DeL.
WHITE, E. H.

ADMITTED TO THE DEGREE OF B.A. AD EUNDEM GRADUM.

OULTON, GEO. JOHNSON.

BACHELORS OF ARTS PROCEEDING TO THE DEGREE OF M. A. IN COURSE

CAMERON, SUSAN ELIZABETH.
HUTCHINSON, DAVID.
JAQUAYS, HOMER M.
LYMAN, KATHERINE T.
ROBERTSON, JOHN C.

ADMITTED TO THE DEGREE OF D.SC. AD EUNDEM GRADUM.

NICOLSON, J. T., D.Sc. (Edin.)

ADMITTED TO THE DEGREE OF LL.D. HONORIS CAUSA.

DOUGLAS JAS.
HARRINGTON, BERNARD J., PH.D. (Yale).

INTERMEDIATE EXAMINATION.

Class I. —STERNS, H. EDGAR.
MCEWEN, JOHN R. } WILLIAMS, HY. S. }
MACNAUGHTON, WM. G.
DICKSON, NORVAL.
BENNETT, C. WINIFRED.

Class II.—STRONG, NORMAN W.
BARRINGTON, FRED. H. }
BROWN, EDWIN O. }
COPEMAN, JOSEPH HODGE. }
COTTON, WM. V. }
MCLEOD, ANGUS B. }
MOLSON, EVELYN.
PAGE, HARRIET A. } SMITH, E. (*Morrin*) }
MCDONALD JOHN. } TEES, FRED. J. }
LOCHEAD, ARTHUR W.
HARPER, ROBT. J. } RADFORD, ISABEL. }
MCPHERSON, THOS.

Class III.—Budden, Ellen M. }
Reid, C. S. (*Morrin*) }
Brown, Albert Victor.
Hickson, Robt. N.
Mitchell, Isaiah E.
Fuller, Geo. D. }
Lindsay, Jno. E. }
Moffatt, Chas. F.
Scrimger, Francis A. C. }
Stephens, Laurence de K. }
Boulter, J. Hy.
Budden, Jessie M. (*s*).
Charters, Herbert. (*s*).
Chipman, Warwick F. (*s*).
Huxtable, Gertrude M. (*s*).
Molson, Percival. (*s*).
Fraser, E. M. (*Morrin*) (*s*)
Nicholson, Wm. (*Morrin*) (*s*)

s. With supplemental in one subject (arranged alphabetically.)

FACULTY OF APPLIED SCIENCE.

PASSED FOR THE DEGREE OF BACHELOR OF SCIENCE.

(In Order of Merit.)

ARCHITECTURE.

Hyde, George Taylor, Montreal, Que.
McLeod, Norman M., Montreal, Que.
Peden, Frank, Montreal, Que.

CIVIL ENGINEERING.

Colpitts, Walter William, Moncton, N.B.
Fraser, Charles Edward, Montreal, Que.
Gagnon, Louis Frederic, Montreal, Que.
Gough, Richard Thomas, Halifax, N.S.
Van Horne, Richard Benedict, Montreal, Que.

ELECTRICAL ENGINEERING.

Grier, Arthur Gordon, Montreal, Que.
Archibald, Ernest Matthew, Halifax, N.S.
Denis, Leopold, Montreal, Que.
Shaw, John Aitkin, Montreal, Que. } equal.
Wilson, Robert Manson, Montreal, Que. }

Featherstonhaugh, Edward Phillips, Montreal, Que.
Fraser, Jam[illegible] William, Bridgeville, N.S.
Hyde, James Clark, Montreal, Que.
Burgess, Rufus Earl, Wolfville, N.S.
Bowman, Archibald Abercromby, New Glasgow, N.S.
Fraser, Harold, Brockville, Ont.
McLea, Ernest Hope, Montreal, Que.

MECHANICAL ENGINEERING.

McLean, William Brown, Pictou, N.S.
Young, William McGie, Renfrew, Ont.
Dargavel, James Sawtell, Elgin, Ont.
Whyte, Jo[illegible]mith, Osgood, Ont.
Wenger, [illegible] Isaac, Ayton, Ont.
Gisborne, [illegible]el Leatham, Ottawa, Ont. } equal
Davidson, William Alexander, Peterboro, Ont. }
Hickey, John Valentine, Montreal, Que.
Ewan, Herbert Marvin, Montreal, Que.
Austin, Claude Vernon Cecil, Ottawa, Ont.
Yorston, Louis, Pictou, N.S.

MINING ENGINEERING.

Kirkpatrick, Stafford Frederick, Kingston, Ont.
Blaylock, Selwyn Gwillym, Danville, Que.
Preston, John, Toronto, Ont. } equal.
Yuile, Norman McLeod, Montreal, Que. }
Campbell, Norman McLeod, Montreal, Que.
Morgan, Charles Baird, Hamilton, Ont.
Pitcher, Norman Charles, Stanstead, Que. } equal.
MacInnes, Henry Walter, Halifax, N.S. }
Moore, William Agnew, Ottawa, Ont.
Waller, George William, Bartonville, Ont.

PRACTICAL CHEMISTRY.

Hutchinson, William Scott, Montreal, Que.
MacLaren, Archibald James, Montreal, Que.

ADMITTED TO THE DEGREE OF BACHELOR OF SCIENCE.

(*Ad eundem.*)

Coker, Ernest, G., B.Sc. (Edinburgh).

ADMITTED TO THE DEGREE OF MASTER OF SCIENCE.

(*In Course.*)

Bell, John Wainwright, B.A.Sc., McGill University, Montreal.
Hedrick, Ira Grant, B.C.E., B.A.Sc. (Univ. Arkansas and McGill).
Jaquays, Homer Morton, B.A., B.A.Sc. (McGill). Mech.
Mellanby, Alexander Lawson, B.E., B.A.Sc. (Durham and McGill).
Strickland, Tom Percival, B.E., B.A.Sc. (Univ. of Sidney and McGill).

ADMITTED TO THE DEGREE OF DOCTOR OF SCIENCE.

(*Ad eundem.*)

John T. Nicolson, D.Sc. (Edinburgh).

FACULTY OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE.

PASSED FOR THE DEGREE OF D.V.S.

Fahey, J. F.
Gellatley, G.
Groves, J. W.
Hammond, E. W.
Kato, Y.
McGregor, James.

Scholarships, Exhibitions and Prize.

SESSION 1898-99.

FACULTY OF ARTS.

I. PRIZE.

1898 McClung, Robt. K., Anne Molson Mathematical Prize.

II. SCHOLARSHIPS (Tenable for two years).

Year of Award.	Names of Scholars.	Subjects of Examination.	Annual Value.	Founder or Donor.
1897	McClung, Robt. K.	Mathematics	$125	Sir W. C. Macdonald
1897	Henderson, Ernest H.	Nat. Science	125	Sir W. C. Macdonald
1897	Robertson, Lemuel	Class. & Mod. Lang	125	Sir W. C. Macdonald
1897	Wainwright, Arnold	Class. & Mod. Lang	125	Sir W. C. Macdonald
1898	Radford, E. Alan	Mathematics	125	Sir W. C. Macdonald
1898	Dey, Mary H.	Mathematics	125	Lord Strathcona and Mount Royal
1898	Cochrane, Donald	Nat. Science	125	Sir W. C. Macdonald
189?	Ferguson, Colin C.	Class. & Mod. Lang	100	Miss Barbara Scott
1898	Nutter, J. Appleton	Class. & Mod. Lang	90	Chas. Alexander, Esq.

III. EXHIBITIONS (Tenable for one year).

NAMES OF EXHIBITIONERS.	Academic Year.	Subject of Examination.	Annual Value.	Founder or Donor.
Johnson, J. Guy W.	Third	Mathematics	$100	Anonymous
Brooks, Elizabeth	"	Mathematics	100	Anonymous
Woodley, E. C.	"	Natural Science	90	Anonymous
Willis, Sam. J.	"	Class. & Mod. Lang	60	New York Graduates' Society*
Sterns, H. Edgar	Second	——	125	Sir W. C. Macdonald
McEwen, John R.	"	——	125	Sir W. C. Macdonald
Brown, Edwin O.	"	——	125	George Hague, Esq.
Copeman, Jos. Hodge	"	——	100	Major Hiram Mills.
Muir, Kenneth C.	First	——	200	Anonymous
Munn, W. Clement	"	——	200	Anonymous
Smith, Miriam G.	"	——	120	Lord Strathcona and Mount Royal
Warriner, J. Eva	"	——	100	Lord Strathcona and Mount Royal
Jack, Milton	"	——	90	Mrs. Jane Redpath.

* The Sir J. William Dawson Exhibition. To this was added $30, making a total of $90.

Prizes, Honours and Standing.

SESSION 1898-1899.

FACULTY OF LAW.

RESULTS OF EXAMINATIONS.

THIRD YEAR.

Walter H. Lynch, Mansonville, Q., First Rank Honours and Elizabeth Torrance Gold Medal.

Edmond B. Drolet, B.A., Montreal, First Rank Honours and Prize of $50.

Frank C. Saunders, Montreal, First Rank Honours and Prize of $25.

STANDING IN THE CLASSES.

THIRD YEAR.

ROMAN LAW—Dean WALTON.

Lynch, Saunders, Drolet, Thorneloe, Ives, McIver, Décarie, Ball, Semple, Vipond, Carter.

CONSTITUTIONAL LAW— Dean WALTON.

Lynch, Carter, Saunders, Drolet, Thorneloe, McIver, Semple and Décarie, equal; Ball, Vipond, Ives.

CRIMINAL LAW—Professor C. P. DAVIDSON.

Lynch, Drolet, Décarie and Ives, equal; Ball, Saunders, Vipond, Thorneloe, McIver, Carter, Semple.

HISTORY, PARTNERSHIP, CORPORATIONS—Professor McGOUN.

Saunders, Drolet, Carter, Lynch, Ives, Décarie, Ball, McIver, Semple, Vipond, Thorneloe.

COMMERCIAL LAW—Professor McMASTER.

Lynch and Ives, equal; Saunders, Drolet, Semple, Décarie, Thorneloe, Vipond, McIver, Carter, Ball.

PRESCRIPTION, LEASE MUNICIPAL, MARRIAGE COVENANTS—Professor FORTIN.

Vipond, Décarie, Lynch, Drolet, Ives, Saunders, Semple, Thorneloe, Ball, Carter, McIver.

OBLIGATIONS—Mr. Aime Geoffrion.

Saunders, Décarie, McIver and Drolet, equal; Ives, Carter, Vipond and Lynch, equal; Semple, Ball, Thorneloe.

REAL RIGHTS—Professor Marler.

Drolet, Décarie, Ives, Saunders, Lynch, Carter and Semple, equal; Ball and McIver, equal; Vipond, Thorneloe.

SUCCESSIONS AND GIFTS—Professor Doherty.

Saunders, Drolet, McIver, Ives, Lynch, Ball, Carter, Décarie and Vipond, equal; Semple, Thorneloe.

INTERNATIONAL LAW AND PERSONS—Professor Lafleur.

Saunders, Drolet, Lynch, Ball, Décarie, Carter, Ives, McIver, Vipond, Thorneloe.

CIVIL PROCEDURE—Mr Ryan.

Drolet, Lynch, Ives, Décarie and Saunders, equal; Carter, Thorneloe, Ball, Semple, Vipond, McIver.

SECOND YEAR.

H. A. Chauvin, First Rank General Standing and Prize of Fifty Dollars.

S. G. Archibald, B.A., First Rank General Standing and Prize of Twenty-five Dollars.

A. W. G. Macalister, First Rank General Standing.

L. Macfarlane, B.A., First Rank General Standing.

PASSED THE SESSIONAL EXAMINATIONS, IN ORDER OF MERIT.

Chauvin, Archibald, Macalister, Macfarlane, Margolese, Redpath and Baker, equal; Mackay, Rinfret, Pearson, Walsh, Dobell, Garneau, Burke, Mayrand, Enright, Kay.

STANDING IN THE CLASSES.

REAL RIGHTS—

Chauvin, Macfarlane, Macalister, Archibald, Margolese, Burke, Redpath, Mackay and Baker, equal; Garneau, Rinfret and Dobell, equal; Pearson, Mayrand, Kay, Walsh, Enright.

CIVIL PROCEDURE—

Chauvin and Macfarlane, equal; Macalister, Archibald, Baker, Margolese, Walsh, Garneau and Mackay and Rinfret, equal; Pearson, Burke, Kay, Mayrand, Enright, Redpath, Dobell.

CRIMINAL LAW—

Chauvin, Archibald, Macalister, Macfarlane, Redpath, Dobell, Mayrand, Baker and Kay, equal; Margolese, Walsh, Mackay, Burke, Pearson, Rinfret, Enright, Garneau.

PUBLIC INTERNATIONAL LAW—

Chauvin, Archibald and Macfarlane, equal; Mackay, Macalister, Baker, Garneau, Margolese, Enright and Redpath, equal; Burke, Pearson, Walsh, Mayrand, Kay, Rinfret and Dobell, equal.

PRESCRIPTION, LEASE AND HIRE, AND MUNICIPAL LAW—

Chauvin, Macalister, Archibald, Redpath, Dobell, Margolese, Baker, Pearson, Rinfret, Walsh, Mackay, Macfarlane and Enright and Kay, equal; Burke, Garneau, Mayrand.

COMMERCIAL LAW—

Chauvin and Redpath, equal; Archibald and Macfarlane, equal; Pearson, Macalister, Walsh, Rinfret, Baker, Margolese, Garneau, Dobell, Burke, Enright, Kay, Mackay, Mayrand.

CORPORATIONS—

Chauvin, Macalister, Archibald, Redpath, Macfarlane and Mackay, equal; Margolese, Rinfret, Mayrand, Pearson, Enright, Garneau, Walsh, Kay, Baker, Burke, Dobell.

ROMAN LAW—

Chauvin, Archibald, Margolese, Macfarlane, Macalister and Baker and Redpath, equal; Enright, Mackay, Rinfret, Mayrand, Dobell and Kay, equal; Walsh, Burke, Pearson, Garneau.

FIRST YEAR.

E. G. Place, B.A., First Rank General Standing and Scholarship of One Hundred Dollars.

G. A. Campbell, B.A., First Rank General Standing and Scholarship of One Hundred Dollars.

R. C. McMichael, First Rank General Standing, Prize of Twenty-five Dollars and British Columbia Graduates' Society Prize of Ten Dollars.

D. M. Rowat, B.A., First Rank General Standing.

A. R. Holden, B.A., First Rank General Standing.

A. E. Doak, First Rank General Standing.

J. R. Thompson, B.A., First Rank General Standing.

PASSED THE SESSIONAL EXAMINATIONS, IN ORDER OF MERIT.

Place, Campbell, McMichael, Rowat, Holden, Doak, Thompson, Mann, Moffat, Westover, Mitchell, Skinner, Beique, Meagher, Curran, Normandin.

McMaster and Springle, Aegrotant.

STANDING IN THE CLASSES.

ROMAN LAW—

Place and Campbell, equal; McMichael, Holden, Rowat, Doak, Thompson, Mann, Westover, Moffat, Skinner, Beique, Mitchell, Curran, Normandin, Meagher.

CONSTITUTIONAL LAW—

Place, Campbell and Holden, equal; Thompson, McMichael, Rowat, Doak, Moffat and Westover, Mann, Normandin, Mitchell, Skinner and Curran, equal; Meagher, Seith, Beique.

PERSONS—

Campbell and Place, equal; McMichael, Holden, Doak, Rowat and Skinner, equal; Thompson, Mann, Moffat, Meagher, Westover, Normandin, Mitchell, Beique, Armstrong and Curran, equal.

REAL RIGHTS—

Doak, Place and Campbell, equal; Holden and Rowat, equal; Thompson, Mann, Moffat, McMichael, Westover, Skinner, Curran, Beique, Meagher, Mitchell, Seath.

SUCCESSIONS—

Rowat, McMichael, Place and Campbell, equal; Doak, Holden and Mann, equal; Westover, Mitchell, Thompson, Skinner, Beique, Curran, Meagher, Moffat, Normandin.

CIVIL PROCEDURE—

Campbell, McMichael, Rowat, Place, Holden, Doak and Thompson, equal; Mann, Skinner, Moffat, Mitchell, Curran, Meagher, Normandin, Westover, Beique, Seath.

LEGAL HISTORY—

Campbell, Place, McMichael, Doak, Rowat, Holden and Thompson, equal; Moffat, Mann, Curran and Westover, equal; Skinner and Mitchell, equal; Beique, Normandin, Meagher, Seath.

OBLIGATIONS—

Place, Rowat, Campbell, Thompson, Holden, McMichael, Doak, Beique, Moffat, Westover, Mann, Normandin, Meagher, Mitchell and Curran, equal.

FACULTY OF MEDICINE.

MEDALS AND PRIZES.

The HOLMES GOLD MEDAL for highest aggregate in all subjects forming the Medical Curriculum, A. H. GORDON, of St. John, N.B.

The FINAL PRIZEMAN for highest aggregate in Fourth Year Subjects, T. G. MCNIECE, of Carsonby, Ont.

The CLEMESHA PRIZE for Clinical Therapeutics, F. J. NICHOLSON, B.A., of Victoria, B.C.

The MCGILL MEDICAL SOCIETY SENIOR PRIZES, 1st Prize, T. G. MCNIECE; 2nd Prize, F. T. TOOKE, B.A.

The THIRD YEAR PRIZEMAN, E. R. SECORD, Brantford, Ont.

The SUTHERLAND MEDALLIST, J. W. T. PATTON, Ponds, N.S.

The SECOND YEAR PRIZEMAN, R. H. KER, B.A., Montreal.

The SENIOR ANATOMY PRIZE, J. BRUCE, B.A., Moncton, N.B.

The MCGILL MEDICAL SOCIETY JUNIOR PRIZES, 1st Prize, C. SHEARER; 2nd Prize, R. P. CAMPBELL, B.A.

The FIRST YEAR PRIZEMAN, R. M. VAN WART, B.A., Fredericton, N.B.

The JUNIOR ANATOMY PRIZE, R. M. VAN WART, B.A.

FACULTY OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE.

PRIZES.

Veterinary Medicine and Surgery—James McGregor.

Cattle Pathology—James McGregor.

Materia Medica—James McGregor.

Anatomy—B. F. Humphries.

Physiology—W. C. Smith.

Cynology—J. W. Groves.

Chemistry—B. F. Humphries.

Botany—J. T. Rork.

For the best general examination in all subjects, a silver medal, the gift of the Dean—James McGregor.

For the best final oral examination before the Board of Examniers—J. W. Groves.

Extra Prizes:—For the best essay read before the Veterinary Medical Association—1st, George Gellatly; 2nd, James McGregor.

For the best essay read before the Society for the study of Comparative Psychology—1st, James McGregor; 2nd, George Gellatly; 3rd, E. W. Hammond.

FACULTY OF ARTS.

GRADUATING CLASS.

B. A. Honours in Mathematics and Natural Philosophy.

McCLUNG, ROBERT K.—First Rank Honours and Anne Molson Gold Medal

B. A. Honours in Classics.

ROBERTSON, LEMUEL.—First Rank Honours and Chapman Gold Medal.

B. A. Honours in Geology, Mineralogy and Palæontology

HOLIDAY, ANNIE.—First Rank Honours and Logan Gold Medal.
HENDERSON, ERNEST.—First Rank Honours and Logan Prize
ELLS, R. HUGH.—First Rank Honours.
REID, LENA McK.—Second Rank Honours.

B. A. Honours in Mental and Moral Philosophy.

WAINWRIGHT, ARNOLD.—First Rank Honours and Prince of Wales Gold Medal.
SCRIMGER, ANNA M.—First Rank Honours.
MACLEOD, JOHN B.—First Rank Honours.
BROWN, WALTER G.—First Rank Honours.
KEITH, HENRY J.—First Rank Honours.
LAURIE, ERNEST.—Second Rank Honours.
POTTER, LUCY E.—Second Rank Honours.
McGILL, I. WINIFRED.—Second Rank Honours.
THOMPSON, JAMES E.—Second Rank Honours.

B. A. Honours in English Language, Literature and History.

PATCH, FRANK S.—First Rank Honours and Shakspere Gold Medal.
McDOUGALL, LOUISE.—Second Rank Honours.
HARDISTY, RICHARD H. M.—Second Rank Honours.

B. A. Honours in Biology.

KING, CHRISTINA C.—Second Rank Honours.

B.A. Honours in Modern Languages and History.

FINLEY, KATHLEEN E.—First Rank Honours and Minto Gold Medal.

B.A. Honours in Semitic Languages and Literature.

RICE, HORACE G.—First Rank Honours.

First Rank General Standing.

COTTON, CHAS. M.—Hiram Mills Gold Medal.

DOVER, M. V., B.A. (*Graduate Course*). First Rank Honour Standing in Biology.
BISHOP, W. GORDON, B.A., Early English Text Society's Prize.
MEYER, J. B., B.A., The Neil Stewart Hebrew Prize.

THIRD YEAR.

MARCUSE, BELLA.—First Rank Honours in Natural Science; First Rank Honours and Prize in Mental and Moral Philosophy.
RADFORD, E. ALAN.—First Rank Honours in Classics; Second Rank Honours in Mathematics and Natural Philosophy; First Rank General Standing.

COCHRANE, DONALD.—First Rank Honours in Natural Science; First Rank General Standing; Prize in Physics.

DEY, MARY H.—First Rank Honours and Prize in Modern Languages and History; First Rank General Standing.

NUTTER, J. APPLETON.—First Rank Honours and Prize in English Language, Literature and History; First Rank General Standing.

HARDY, CHARLES A.—First Rank Honours and Prize in Mental and Moral Philosophy; First Rank General Standing; Prize in Hebrew.

JOHNSON, J. GUY W.—First Rank Honours in Mathematics and Natural Philosophy; First Rank General Standing.

FERGUSON, COLIN C.—First Rank Honours in Classics; First Rank General Standing.

WILLIS, SAMUEL J.—First Rank Honours in Classics; Prize in Latin.

NEWSON, WILLIAM V.—First Rank Honours in Natural Science.

MCGREGOR, CLAIRE R.—First Rank Honours in Mental and Moral Philosophy.

COOKE, LESTER H.—First Rank Honours in Mental and Moral Philosophy.

CROWELL, BEAUMONT C.—First Rank Honours in Mental and Moral Philosophy.

ELLS, SYDNEY C.—First Rank Honours in English Language, Literature and History.

WOODLEY, EDWARD C.—First Rank Honours in English Language, Literature and History.

SCOTT, GEORGE W.—Second Rank Honours in Mathematics and Natural Philosophy.

FORBES, WILFRED M.—Second Rank Honours in Classics.

BROOKS, ELIZABETH A.—Second Rank Honours in Classics.

COHEN, ABRAHAM.—Second Rank Honours in Mental and Moral Philosophy; First Rank General Standing.

RORKE, HELEN.—Second Rank Honours in English Language, Literature and History.

MACMILLAN, CYRUS J.—Second Rank Honours in English Language, Literature and History.

DEWITT, JACOB.—Second Rank Honours in English Language, Literature and History.

WEINFELD, HENRY.—Second Rank Honours in English Language, Literature and History.

JACKSON, E. GERTRUDE.—Second Rank Honours in English Language, Literature and History.

GARLICK, EDYTHE A.—First Rank General Standing; Prize in Greek; Prize in Latin.

ELDER, ROBERT.—First Rank General Standing.

RITCHIE, CHARLES F.—Prize in French.

CARR, MURIEL (B. A.)—(*Graduate Course*).—First Rank Honour Standing in English Literature.

DOVER, M. V, (B. A.)—(*Graduate Course*).—First Rank Honour Standing in Mineralogy.

THIRD YEAR.

PASSED THE SESSIONAL EXAMINATION.

Cochrane, Dey, Garlick, Nutter; Elder and Hardy and Johnson (J. G.), equal; Cohen and Radford, equal; Ferguson, Rowell, Marcuse; Lee and Woodley, equal; Crack; Crowell and Willis, equal; Grier and MacKinnon and McGregor,

equal ; Forbes and Jackson and Newson and Scott (G. W.) and Smith, equal ; Cooke ; Rorke and Weinfeld, equal ; Holman, Ells, Lundie, MacMillan, Brooks, Ainley, Stewart, DeWitt, Millar.

STUDENTS REGISTERED IN THE MEDICAL FACULTY.

Arranged alphabetically.

Dixon, Ritchie, Walker.

SECOND YEAR.

TERNS, H. E.—(Prince of Wales College, P. E. I.). First Rank Honours and Prize in Mathematics ; First Rank General Standing ; Vancouver Society's Prize ; Prize in Greek ; Prize in Latin ; Prize in Logic ; Prize in German.

BARRINGTON, FRED. H.—(Waterloo Academy). First Rank Honours and Prize in Mathematics.

BROWN, E. O.—(Prince of Wales College, P. E. I.). Second Rank Honours in Mathematics.

DICKSON, NORVAL, (Huntingdon Academy.)—First Rank General Standing. Prize in French.

MCEWEN, JOHN R., (Huntingdon Academy.)—First Rank General Standing.

WILLIAMS, HENRY S., (M. H. S.)—First Rank General Standing.

MACNAUGHTON, WM. G., (Huntingdon Academy.)—First Rank General Standing.

BENNETT, C. WINIFRED, (M. G. H. S.)—First Rank General Standing. Prize in French.

MCLEOD, ANGUS B., (Prince of Wales Coll., P.E.I.)—Prize in Hebrew. Prize in Botany.

COTTON, WM. U., (Feller Institute.)—Prize in History.

PAGE, HARRIET, (Stanstead Wesleyan Coll.)—Prize in Botany. Prize in German.

RADFORD, ISABEL, (Misses Symmers and Smith.)—Prize in French.

SECOND YEAR.

PASSED THE SESSIONAL EXAMINATION.

Class I.—Sterns ; McEwan and Williams, equal ; McNaughton, Dickson, Bennett.

Class II.—Strong ; Barrington and Brown (C.) and Copeman and Cotton and McLeod, equal ; Molson (E.), Page ; McDonald and Tees, equal ; Lochead Harper and Radford, equal ; McPherson.

Class III.—Budden (E.), Brown (A. V.), Hickson, Mitchell ; Fuller and Lindsay, equal ; McCatt ; Scrimger and Stephens, equal ; Boulter, Budden (J.) (*s* Charter *s*), Chipman (*s*), Huxtable (*s*), Molson (P.) (*s*).

s.—With supplemental examination in one subject (arranged alphabetically).

FIRST YEAR.

CROWELL SAMUEL G., (Yarmouth Academy, N.S.)—First Rank Honours and Prize in Mathematics ; Prize in Latin ; First Rank General Standing ; Coster Memorial Prize.

ASTLE, THOMAS S., (Albert College.)—First Rank Honours and Prize in Mathematics.

MUNN, W. CLEMENT, (Quebec H. S.)—First Rank Honours and Prize in Mathematics ; Prize in Greek ; Prize in English, First Rank General Standing.

CARLYLE, ERNEST J., (Woodstock Coll. Inst.)—First Rank General Standing ; Prize in Greek.

MCLACHLAN JESSIE W., (M. G. H. S.)—Prize in German.

IRVING, ELIZABETH, (Prince of Wales Coll.)—Prize in English.

FIRST YEAR.

PASSED THE SESSIONAL EXAMINATION.

Munn, Carlyle, Crowell, Harris; Smith; Astle and Murphy and McLachlan, equal; Ellison (A.) and Hitchcock and Irving and Muir and Pruyn, equal; Jack, Fox, Warriner, Nolan, Cole, Carson, Price, Adams, Ascah (*s*), Blagrave (*s*), Eaton (*s*), Ogilvie (*s*), Schrag (*s*).

(*s*) With supplemental examination in one subject (arranged alphabetically).

AWARD OF SCHOLARSHIPS, EXHIBITIONS AND PRIZES. SEPTEMBER, 1898.

I. FOURTH YEAR.—*Anne Molson Mathematical Prize.*—McClung (Robt. K.).

II. THIRD YEAR.—SCHOLARSHIPS (tenable for two years) and EXHIBITIONS (tenable for one year).

Mathematical.—Radford (E. Alan), Scholarship (*a*); Dey (M. Helena), Scholarship (*b*); Johnson (J. Guy W.), Exhibition (*c*); Brooks (El.), Exhibition (*c*).

Natural Science.—Cochrane (Donald), Scholarship (*a*); Woodley (E. C.,) Exhibition (*g*).

Classical and Modern Language.—Ferguson (Colin C.), Scholarship (*e*); Nutter (J. Appleton), Scholarship (*f*); Willis (Sam. J.), Exhibition (*p*).

III. SECOND YEAR.—EXHIBITIONS (tenable for one year.)

(*a*) Sterns (H. Edgar), Prince of Wales College, P.E.I.
(*a*) McEwen (John R.), Huntingdon Academy.
(*h*) Brown (Edwin O.), Prince of Wales College, P.E.I.
(*i*) Copeman (Joseph Hodge), Quebec High School.

IV. FIRST YEAR.—EXHIBITIONS (tenable for one year).

(*k*) Muir, Kenneth C.), Huntingdon Academy.
(*k*) Munn (W. Clement), Quebec High School.
(*l*) Smith (Miriam G.), Morrisburg Collegiate Inst.
(*m*) Warriner (J. Eva), M.G.H.S. and Private Tuition.
(*n*) Jack (Milton), Montreal Collegiate Inst.

(*a*) Annual value $125—Founder, W. C. McDonald, Esq.
(*b*) " " $125—Donor, Lord Strathcona and Mount Royal.
(*c*) " " $100—
(*e*) " " $100—Founder, Barbara Scott.
(*f*) " " $90— " Chas. Alexander, Esq.
(*g*) " " $90—
(*h*) " " $125—Donor, Geo. Hague, Esq.
(*i*) " " $100—Founder, Major Hiram Mills.
(*k*) " " $200—
(*l*) " " $120—Donor, Lord Strathcona and Mount Royal.
(*m*) " " $100— " Lord Strathcona and Mount Royal
(*n*) " " $90—Founder, Mrs. Jane Redpath.
(*p*) Sir Wm. Dawson Exhibition and $30.

SUPPLEMENTAL EXAMINATIONS.

PASSED.

September to Christmas, 1898.

(*a*) *Supplemental Sessional.*

THIRD YEAR.—Duguid (Robt. C.), Heeney (Wm. B.), Munroe (Thos. A.), Hurst (Isabel M.), Armstrong (Cath.), Reynolds (L. E. M.).

SECOND YEAR.—Crack (Isaac E.), Lundie (Jessie F.), McGregor (Claire R.), Perley (Frances B.).

FIRST YEAR.—Cole (G. Percy), Day (Daisy W.).

(*b*) *Supplemental in one Subject.*

SECOND YEAR.—Grier (Geo. W.), Jeakins (Chas. E.), Millar (W. Kinloch), Reford (Lewis L.), Woodley (Ed. C.), [illegible]an (Carrie E.), Mitchell (S.)

FIRST YEAR.—Irving (Geo.), Mount (Hector P.), Brodie (Hugh H.), Budden (Ellen M.), Budden (Jessie M.), Carruthers (Chris.).

STANDING IN THE SEVERAL SUBJECTS.

Students of equal standing are bracketed together.

Students of Morrin College are indicated by (*Mor.*).

B. A. ORDINARY.

GREEK.

Class I.

Robertson,
Cotton.

Class II.

None.

Class III.

Holland.

LATIN.

Class I.

Robertson.

Class II.

Cotton.

Class III.

Hurst,
Munroe,
Johnson,
Armstrong, Reynolds, Seifert, (*Mor.*)
Brodie,
Cumming,
Lundie.

MECHANICS.

Class I.

Cotton,
Thompson,
Seifert (*Mor.*)
McDonald,
Keith.

Class II.

Johnson H.,
MacLeod,
Gardner,
Armstrong,
Cumming,
Wainwright,
Lundie.

Class III.

Johnson De L.,
Meiklejohn (*Mor.*)
Jackson (*Mor.*)
Laurie,
Brodie,
Heeney, Patch,
Hurst,
Hardisty
Brown, Duguid,
Reynolds.

ASTRONOMY AND OPTICS.

Class I.

McClung,
Armstrong, Cotton, Seifert, (*Mor.*)

Class II.

Johnson H.
Johnson R. de L. Meiklejohn (*Mor.*)

Class III.

Heeney, McDonald,
Lundie,
Cumming,
Duguid, Jackson (*Mor.*)

PHYSICS.

Class II.

Johnson, H.

Class III.

Hurst.

B. A. ORDINARY.

LABORATORY COURSES

ELECTRICITY AND MAGNETISM.

Class I.

McClung.

HEAT, LIGHT AND SOUND.

Class II.

Johnson H.

MORAL PHILOSOPHY.

Class I.

Wainwright,
Scrimger,
Rice,
Cotton, McLeod,
Brown,
Lawrie,
Johnson, H.
Reynolds,
Mackay,
Heeney, Thompson.

Class II.

McDonald,
Goodall,
McGill,
Keith,
Secord,
Lundie,
Angell, Munroe, W., Cumming
Hurst, Potter, McDougall,
Meiklejohn, (*Mor.*) Jackson, (*Mor.*)

Class III.

Holland, Munroe, T. H.,
Gardner,
Brodie,
Dixon,
Armstrong, McInnes,
White,
Ells, Hicks,
Duguid,
Kaine,
McKenzie,
Greig,
Smith, G. E.

ENGLISH LITERATURE.

Class I.

Cotton, Patch,
McDougall,
McGill,
Heeney.

Class II.

Hardisty,
Reid,
Meiklejohn (*Mor.*) Seifert, (*Mor.*)
Duguid,
Hurst, Reynolds,
Jackson (*Mor.*)

Class III.

White,
Holland, McDonald,
McKenzie, Munroe,
Potter,
Armstrong,
Lundie,
Brodie.

FRENCH.

Class I.

Finley, Holiday,
Brodie, Seifert (*Mor.*)

Class II.

Dixon,
Goodall,
Meiklejohn (*Mor.*) Jackson (*Mor.*)
Cumming, Duguid,

GERMAN.

Class I.

Finley.

Class II.

Johnson,
King.

HEBREW.

Class I.

Rice.

Class II.

Mackay.

GEOLOGY AND MINERALOGY.

Class I.

Henderson,
Ells, Holiday,
Reid,
Cotton,
Munroe,
Lundie.

Class II.

Radford, Hurst,
Cumming,
Brodie, Reynolds,
Holland,
Armstrong.

Class III.

Heeney,
Greig,
McInnis.

BOTANY.

Class I.

Scrimger,
King.

Class II.

Dover.

Class III.

Radford.

ZOOLOGY.

Class I.

Henderson,
Dover.

Class II.

King.

Class III.

Radford.

THIRD YEAR.

GREEK.

Class I.

Garlick,
Ferguson,
Radford.

Class II.

Willis.

Class III.

Forbes,
Brooks,
Ainley,
Crowell,
Smith.

LATIN.

Class I.

Willis,
Ferguson,
Garlick,
Forbes,
Radford,
Smith.

Class II.

Brooks,
Jeakins,
Dixon,
Holman,
Crack,
Fyles (*Mor.*)
Lundie.

Class III.

Rowell,
Ritchie,
Cooke,
Grier,
McGregor
Mackinnon,
Rorke,
Walker,
Millar.

MECHANICS.

Class I.

Cochrane,
Elder,
Grier,
Cohen,
Rowell,
Lee,
Dey, Nutter,
Garlick.

Class II.

Radford,
MacKinnon,
Hardy,
Crowell,
Crack,
Johnson,
Smith,
Ells,
Ferguson.

Class III.

Millar,
Holman,
Jackson,
Marcuse, Newson,
McGregor,
Cooke,
Willis,
Ainsley,
Forbes,
Woodley,
Fyles (*Mor.*)
Stewart,
Loverin (*Mor.*)
Scott,
Lundie,
Brooks,
DeWitt, Macmillan,
Weinfeld,
Macrae (*Mor.*)

ASTRONOMY AND OPTICS.

Class I.

Dey,
Hardy,
Elder,
Johnson, J. G. W. Rowell.

Class II.

Nutter, Smith,
Mackinnon,
Cohen,
Garlick, Newson,
Crack,
Lundie, McGregor,
Cooke.

Class III.

Ells,
Radford,
Jackson, Scott, G. W.,
Millar,
Holman, Fyles (*Mor.*) Laverie (*Mor.*)
Macmillan, Weinfeld,
Perley, Willis,
Lee,
Stewart,
DeWitt, MacRae (*Mor.*) Jenkins.

PHYSICS.

Class I.

Cochrane, G.
Johnson J.G.W.
Radford.

Class II.

Scott, G. W.

Honours in Mathematics and Natural Philosophy.

JOHNSON, J. G. W.—First Rank.

RADFORD, E. A.—Second Rank.

SCOTT, G. W.—Second Rank.

THIRD YEAR.

PHYSICS.

LABORATORY COURSE.

Class I.

Cochrane.

Class II.

Johnson (J. G. W.), Radford, Scott (G. W.).

ENGLISH LANGUAGE AND RHETORIC.

Class I.

Nutter (Prize).
Woodley.

Class II.

Macmillan,
Jackson,
Newson, Weinfeld,
Perley,
Horsfall,
Rorke,
Stewart (D)
Grier,

Class III.

Ainley, Cooke,
Holman,
DeWitt, Lee,
Scott (G. W.),
Ells,
Millar.
Lundie,

MENTAL PHILOSOPHY.

Class I.

Marcuse,
Lee,
Elder,
Munroe (W.),
Powell,
Cochrane,
McGregor, Masson, Hardy, Scott (H.E.)

Class II.

Seifert,
Cohen,
MacKinnon, Rowell,
Crack,
Clarke.
Horsfall,
Coone, Crowell,
Grier, Lamb,
Cooke, Woodley,
Lloyd.

Class III.

Bailey, Crabb,
Hamilton,
Hicks,
Secord,
Wiggins,
Stewart.
Miller,
Greene,
Jeakins,
DeWitt,
Ainsley, Millson, Millar, Vickery,
Ritchie.

FRENCH.

Class I.

Cohen, Dey, Garlick, Ritchie, Weinfeld.
Crovell, Dixon, Jackson, Lundie, Johnson, McGregor, Rowell.

Class II.

Elder, McKinnon, MacMillan, Reford,
Crack, Ells, Holman, Rorke, Smith, Waller.

Class III.

Brooks, Perley.

GERMAN.

Class I.
Dey.

Class II.

Ferguson,
Forbes.

HEBREW.

Class I.
Hardy, C. A. (*Prize*)

Class II.
Laverie (*Mor.*)

Class III.

Swirton, J,
Turkington.

THIRD YEAR.

ZOOLOGY.

Class I.

Nutter.

Class II.

Newson,
Grier, }
Marcuse. }

Class III.

Ainley, }
Horsfall, }
Reford. }

BOTANY.

Class I.

Woodley,
Marcuse, }
Reford. }

Class II.

Rorke.

SECOND YEAR.

GREEK.

Class I.

Sterns,
McEwen, }
Barrington, }
Williams, }
Copeman, }
McNaughton, }
Strong, }
Dickson, }
Cotton,
Brown, E.

Class II.

Harper,
McLeod,
McDonald,
Lochead,
Pearson, B. A., }
Chipman, }
Jordan, B. A.,
Brown, A.,

Class III.

Reid, A. S. (*Mor.*) }
Lindsay, }
McPherson,
Tatley, B. A., }
Charters, }
Hickson,
Moffatt,
Mount,
Scrimger, C., }
Nicholson (*Mor.*) }
Mitchell,
Fuller,
Tees, }
Carruthers, }

LATIN.

Class I.

Sterns,
McEwen,
Williams,
Barrington,
Copeman,
Brown, E. O.,
Bennett,
Dickson,
McNaughton.

Class II.

McDonald,
Cotton, }
Molson, E., }
Strong,
Page,
Harper, }
Lochead, }
Lindsay,
Radford,
McLeod,
Smith (*Mor.*)
Huxtable,
Chipman,
Moffatt,
McPherson,
Stephens,
Tees.

Class III.

Budden, J. M., }
Reid (*Mor.*), }
Mount,
Brown. A. V.,
Boulter,
Budden, E. M.
Hickson, }
Mitchell, }
White,
Viner,
McCormick, }
Clogg, }
Ross, }
Scrimger, }
Nicholson (*Mor.*)
Fraser (*Mor.*)
Fuller,
Carruthers,
Mowatt,
Charters,
Molson.

SECOND YEAR.

GEOMETRY AND ARITHMETIC.

Class I.
Sterns,
Barrington,
Brown (E O.),
McMurtry (C.),
Strong,
Dickson,
Smith (*Kor.*)
Williams,
Cotton,
McLeod,
McEwan, Tees,
Nicholson (*Mor.*) Reid (*Mor.*)
Molson (P.),
Harper,
McDonald,
McNaughton.

Class II.
Brown (A. V.), Lochead,
Pagn,
Copeman,
McMurtry (G),
Bennett Fraser (*Mor.*)
McPherson, Scott,
Scrimger,
McCormick,
Charters,
Parker,
Fuller, Hickson,
Molson (E.).

Class III.
Brodie, Lindsay, Mitchell,
Ross,
Viner,
Boulter,
Cole, Irving,
Moffatt, Mowatt,
Stephens,
Radford,
Budden (E.),
Huxtable,
Anderson, Ritchie (*Mor.*)
Chipman,
White,
Mount.

TRIGONOMETRY AND ALGEBRA.

Class I.
Sterns,
Molson (E.)

Class II.
McEwen, Bennett,
Molson (P.),
Brown (E. O.), McPherson,
Strong,
Fraser (*Mor.*)
Viner, Smith (*Mor*)
MacNaughton,
Dickson, Williams, Barrington, Tees.

Class III.
Cotton,
Harper, Huxtable, Nicholson (*Mor.*)
McLeod, McMurtry (G.),
Copeman,
Budden (J.), Mitchell,
Budden (E.),
Lochead,
McDonald, McMurtry (S.),
Ritchie (*Mor.*)
Scrimger, Page,
Boulter, Ireland (A.),
McCormick, Radford,
Reid (*Mor.*)
Lindsay,
Chipman,
Brown (A. V.),
Moffatt, Mount,
Hickson,
Brodie, Stephens, Fuller, Irving,
Scott.

LOGIC.

Class I.
Sterns,
Chipman,
MacNaughton,
Lochead,
Williams,
Tees,
Molson (P.),
Bennett, Hickson,

Class II.
Radford,
Molson (E.),
Fuller, Hamilton,
Dickson,
Bickerdike,
Cotton, MacLeod (A. V.),
Viner,
Scrimger,
Budden (E. M.), Strong,
Brown (E. O.), Lindsay, Sawyer,
Irving.

Class III.
Ross, Sutcliffe,
Harper, Brown (A. V.), McDonald, McMurtry (G. O.),
Clarke, McMurtry (S. O.)
Willis,
Copeman, Brodie, Charters,
Coone,
Page,
Budden (J. M.),
Kaine,
Mathieson,
Greenaway,
Mowatt,
Day,
Moffatt, Swinton,
Barrington, Green, Lloyd, Stephens.

Honours in Mathematics.

STERNS.—First Rank and Prize.

BARRINGTON.—First Rank and Prize.

BROWN, E. O.—Second Rank.

SECOND YEAR

FRENCH.

Class I.

Bennet,
Dixon,
Radford,
Tees,
Page,
Williams,
Copeman,
McDonald,
McEwen,
MacNaughton,
Molson (Evelyn),
Stephens,
Strong,
Nicholson (*Mor.*)
Smith (*Mor.*)
Reid (*Mor.*)

Class II.

Budden (E. M.),
McMurtry, (G. O.)
Budden (J M.),
Chipman,
McPherson,
Molson (P.),
Ross,
Cotton,
Fraser (*Mor.*)
Ritchie (*Mor.*)

Class III.

Huxtable,
Barrington,
Cole,
Fuller,
Harper,
Willis,
Charters,
Day,
Ireland,
McCormick,
Moffatt,
Mowat,
Scrimger,
Viner,
Bickerdike,
Boulter,
Parker,
White.
Brodie,
McMurtry, (S. O.)
Scott, (W. J.)

GERMAN.

Class I.

Sterns,
Mitchell.

Class II.

Brown,
Lochead.

Class III.

Ross.

IN PLACE OF GREEK.

Class III.

Stephens,
Boulter.

(DONALDA DEPARTMENT.)

Class I.

Page,
Bennett.
Budden (J.)
Molson,
Huxtable.

Class II.

Radford,
Willis,
Plimsoll.

Class III.

Budden (E.)
Bickerdike.

MORRIN COLLEGE.

SPECIAL EXAMINATION.

Class II.

Smith,
Fraser.

HEBREW.

Class. I.

McLeod (*Prize*).

Class II.

MacInnes,
Lapointe.

Class III.

Brown,
Lindsay,
Anderson,
Mount,
Irving,
Carruthers.

SECOND YEAR.

BOTANY.

Class I.

McLeod,
McNaughton,
Page,
Fuller,
Tees,
Williams,
Dickson.

Class II.

Radford,
Bennett,
Cotton, Molson,
Budden,
Carruthers, Copeman,
Brodie,
Bickerdike, McDonald,
Harper,
Charters,
McMurtry (S. O.)

Class III.

Molson,
Moffatt,
Budden, Ireland, Scrimger,
McMurtry, (G. O.)
Irving, Lindsay,
Huxtable,
Brown, Cole, Hickson,
Stephens,
Scott, Willis,
Mowatt,
Parker,
Swinton,
McCormick.

MODERN HISTORY.

Class I.

Sterns *Prize*
Cotton *Prize*
Harper, McDonald,
Molson, P.,
Ross, Williams,
Lochead, McEwen,
Chipman, Hickson.
Barrington, Carruthers, McLeod, MacNaughton,
Copeman.

Class II.

Brown (A. V.),
McPherson, Smith (*Mor.*)
Bickerdike, Dickson, Moffatt, Willis,
Budden (E. M.), Radford,
Mitchell,
Viner,
Molson (E.), Stroug,
Bennett, Tees,
Page,
Ritchie (*Mor.*).
Brown (E. O.), McMurtry (S. O.),
Reid (*Mor.*),
Huxtable.

Class III.

Mount,
McCormick,
Budden (J. M.), Fuller,
Ireland,
Lindsay, Nicholson (*Mor.*),
Irving,
Stephens,
Greenaway, Scrimger,
Charters,
Parker, White,
Boulter, Cole, Fraser (*Mor.*), McMurtry (G. O.),
Brodie, Swinton.

FIRST YEAR.

GREEK.

Class I.

Munn (W.),
Carlyle,
Muir,
Crowall,
Warriner,

Class II.

Fox,
Smith,
Miller,
Jack,
Harris,

Class III.

McDonald,
Cole,
Price,
Carson,
Wright,
Munn (E), (*Mor.*)
Ascah,
Blagrave,
Adams.

LATIN.

Class I.

Crowell,
Carlyle,
Munn,
Smith,
Muir,
Murphy,
Miller (*Mor.*)
Harris,
Dixon,
Irving.

Class II.

Fox,
Nolan,
Astle,
Ellison (A.),
McDonald,
Troop,
Munn (*Mor.*)
Gibsone (*Mor.*)
Hitchcock,
Jack,
McLachlan,
Greenleese,
Pruyn,
Ogilvie,
Warriner,
Eaton.

Class III.

Cole,
Brown,
Adams,
Price,
Wright,
Ascah,
Baillie,
Crothers,
Kinnear (*Mor.*)
Fortier,
Carson,
Blagrave,
Schrag,
Fyles (*Mor.*)

GEOMETRY AND ARITHMETIC.

Class I.,

Munn W.,
McDonald,
Crowell,
Carlyle,

Class II.

Muir,
Murphy,
Astle,
Harris,
Miller (*Mor.*)
Pruyn,
Dixon,
Irving,
Fox,
McLachlan,
Smith,
Fyles (*Mor.*)
Jack,
Boright,
Munn E. (*Mor.*)
Ellison A.,
Hitchcock.

Class III.

Nolan,
Cole,
Price,
Blagrave,
Raymond (*Mor.*)
Andrews,
Carson,
Dempsey,
Ascah,
Warriner,
Ogilvie,
Brown,
Bailie,
Adams,
Wotherspoon,
Kinnear (*Mor.*)
Crothers,
Troop,
Gibsone (*Mor.*)
Greenleese,
Eaton,
Schrag.

FIRST YEAR.

TRIGONOMETRY AND ALGEBRA.

Class I.

Munn (W.),
Crowell,
Carlyle,
Harris, Pruyn,
Miller, McDonald,

Class II.

Jack, Price,
Murphy,
Hitchcock.

Class III.

Muir, Boright,
Ellison,
Fox,
Cole,
Adams,
Smith,
Ascah, Nolan,
Fyles (*Mor.*)
Carson, McLachlan, Dixon,
Wotherspoon,
Astle, Baillie,
Warriner,
Blagrave,
Irving,
Gibsone (*Mor.*)
Dempsey,
Ogilvie
Munn (E) (*Mor.*)
Eaton,
Schrag.

PHYSICS.

Class I.

Boright, Dixon, Harris, Munn,
Carlyle, McLachlan,
Ascah,
Astle,
Blagrave,
Ellison (A. A.),
Irving (E.),
Nolan,
Plant,
Pruyn,
Smith (M. G.).

Class II.

Carson, Murphy,
Adams,
Browne (H. D.),
Cole,
Crowell,
Fox,
Hitchcock,
Jack,
Warriner,

Class III.

Andrews,
Eaton,
Fortier,
Muir,
Price,
Schrag.
Crothers, Wotherspoon,
Donnelly.

ENGLISH LITERATURE AND HISTORY.

Class I.

Irving, Munn,
Dixon,
Laughlin,
Carlyle,
Astle,
Hitchcock,
Carson, Plant,
McLachlan, Prowse, Smith.

Class II.

Jack,
Cole,
Murphy,
Adams, Schrag,
Lamb, McDougall,
Pruyn,
Warriner,
Price,
Browne, Crowell, Muir,
Ellison, Troop,
Nolan.

Class III.

Greenleese, Harris, Ogilvie,
Fox,
Kingsley,
Wright,
Boright,
Fortier,
Robertson,
Wilson.

Advanced Section in Mathematics—First Rank Honours.

CROWELL, (Prize). ASTLE, (Prize). MUNN, (Prize).

FIRST YEAR.

FRENCH.

Class I.

Plant.

Class II.

Ellison,
Dixon,
Crowell,
Muir,
Munn,
Murphy,
Rainey.

Class III.

Astle,
Cole,
MacDonald,
Pruyn,
MacDougall,
Warriner,
Wotherspoon,
Greenleese,
Andrews,
Boright,
Browne,
Irving,
Nolan,
Ogilvie,
Adams,
Baillie,
Crothers,
Des Aulniers,
Fortier.

GERMAN.

Class I.

Plant,
McLachlan.

Class II.

Astle,
Hitchcock,
Irving.

Class III.

Greenleese,
Kingsley.

PHYSICAL CULTURE.

Wicksteed Medals.

L. Denis.....4th Year Applied Science, Silver
B. E. Wiley.....2nd Year Medicine, Bronze

Donalda Prizes.

Lena Reid.....4th Year Arts, Prize
Mary Dey.....3rd Year Arts, Prize

FACULTY OF APPLIED SCIENCE.

GRADUATING CLASS 1899.

ARCHIBALD, ERNEST MATTHEW.—Honours in Experimental Physics, Hydraulics, Hydraulic Laboratory Work, Electrical Engineering (Electric Lighting, A. C. Machinery), Electrical Laboratory Work.

BLAYLOCK, SELWYN GWILLYM.—2nd Carlyle Prize of $50; Honours in Geology (Advanced), Metallurgy and Assaying (Theoretical).

BURGESS, R. EARL.—Honours in Hydraulic Laboratory Work.

COLPITTS, WALTER WILLIAM.—British Association Medal and Prize; Prize for Summer Thesis; Honours in Graphical Statics, Theory of Structures, Designing, Hydraulics and Hydraulic Machinery, Geodesy and Geodetic Laboratory Work.

DARGAVEL, JAMES SAWTELL.—Honours in Thermodynamics.

DENIS, LEOPOLD.—Honours in Electrical Laboratory Work, Wicksteed Medal for Physical Culture.

FEATHERSTONHAUGH, EDWARD PHILLIPS.—Honours in Electrical Engineering (Electric Lighting, A. C. Machinery) and Electrical Laboratory Work.

FRASER, CHARLES EDWARD.—Honours in Testing Laboratory Work.

GOUGH, RICHARD THOMAS.—Honours in Testing Laboratory Work.

GRIER, ARTHUR GORDON.—British Association Medal and Prize; Honours in Experimental Physics, Hydraulics and Hydraulic Machine, Machine Design, Dynamics of Machinery, Thermodynamics, Electrical Engineering (Electric Lighting, A. C. Machinery), and Electrical Laboratory Work.

HUTCHINSON, WILLIAM SCOTT.—British Association Medal and Prize; Honours in Theoretical and Practical Chemistry and in Mineralogy.

HYDE, GEORGE TAYLOR.—Second Taylor Prize for Summer Thesis.

KIRKPATRICK, STAFFORD FREDERICK.—British Association Medal and Prize; 1st Carlyle Prize of $100; Honours in Geology (Advanced), Metallurgy, Assaying (Theoretical). Mining and Metallurgical Laboratory Work, and Ore Dressing.

MCLEA, ERNEST HOPE.—Honours in Electrical Engineering (A. C. Machinery).

MCLEAN, WILLIAM BROWN.—British Association Medal and Prize; British Association Exhibition; McFee Prize for Summer Thesis; Honours in Dynamics of Machinery, Machine Design, Thermodynamics, Hydraulics and Hydraulic Machinery, Mechanical Engineering Laboratory Work and Hydraulic Laboratory Work.

MCLEOD, NORMAN.—First Taylor Prize for Summer Thesis.

MORGAN CHARLES BIRD.—The Fraser and Chalmers Prize and Honours for Mining Laboratory Work.

PEDEN, FRANK.—Honours in Cement Testing Laboratory Work.

PITCHER, NORMAN CHARLES.—Honours in Metallurgy and Ore Dressing.

PRESTON JOHN.—Honours in Mining and Designing.

WILSON, ROBERT MANSON.—Greenshields Prize for Summer Thesis; Honours in Electrical Engineering (Electric Lighting, Electric Railways), and Electrical Laboratory Work.

YOUNG, WILLIAM McGIE.—Honours in Dynamics of Machinery and Hydraulic Laboratory Work.

YUILE, NORMAN McLEOD.—Honours in Metallurgy and Assaying (theoretical).

THIRD YEAR.

Allen, Samuel J.—Prizes in Electro-Magnetism and Graphical Statics.
Anglin, James P.—McCarthy Prize for Surveying Field Work.
Black, Thompson, T.—British Columbia Graduates' Society Prize.
Byers, Archibald J.—Prizes in Municipal Work.
Ewart, George R.—McCarthy Prize for Surveying Fieldwork; Prizes in Surveying and Railway Work.
Gillean, R. Hampson.—Prizes in Metallurgy, Determinative Mineralogy and Geology.
Nelson, George J.—Prizes in Theory of Structures and Direct Current Machinery.
Percy, Howard M.—Prize for Machine Design.
Shepherd, Harry L.—Prizes in Mathematics, Thermodynamics and Mechanical Drawing.
Walker, Frank W.—Prize in Dynamics of Machinery.

PASSED IN THE PRIMARY EXAMINATIONS.

(In Order of Merit).

CIVIL ENGINEERING.

Ewart, George R., Kilauea, Kanai, Hawaiian Islands.
Byers, Archibald F., Gananoque, Ont.
Burgoyne, Stanley J., Halifax, N.S.
Corriveau, Raoul de B., Iberville, Que.

ELECTRICAL ENGINEERING.

Allan, Samuel J., Maitland, N.S.
Nelson, George J., Montreal, Que.
Duncan, G. Rupert, Montreal, Que.
Miller, Angus K., Bridgeburg, Ont.
*Black, Thompson T., Sackville, N.B.
Montgomery, George, Morrisburg, Ont.
*St. George, Harry L., Montreal, Que.
Glassco, Jack G., Hamilton, Ont.
Fraser, John W., Charlottetown, P.E.I.

* To pass Supplemental Examination.

MECHANICAL ENGINEERING.

Shepherd, Harry L., Brockville, Ont.
Walker, Frank W., Montreal, Que.
Hamilton, George M., Peterboro, Ont.
Percy, Howard M., Montreal, Que.
Neville, Thomas P. J., Halifax, N.S.
Arkley, Lorne M., East Angus, Que.
Macmaster, Arthur W., Montreal, Que.
Osborne, J. Ewart, Toronto, Ont.
*Smith, George B., Stratford, Ont.

MINING ENGINEERING.

Gillean, R. Hampson, Montreal, Que.
Buffett, Aaron F., Grand Bank, Newfoundland.
Corriveau, Raoul de B., Iberville, Que.
Robertson, Philip W. K., Mexico City, Mexico.
Cowans, Frederick, Montreal, Que.
*Moore, Ernest V., Peterboro, Ont.
*Buchanan, Fitzherbert P., Montreal, Que.

PRACTICAL CHEMISTRY.

*Barber, Rene R., Georgetown, Ont.

SECOND YEAR.

Archer, Augustus R.—Prize for Mapping.
Burson, Herbert A.—Prizes in Kinematics and Descriptive Geometry.
Clement, S. B.—Prizes in Physics and Surveying. Scott Prize of $25.
DeBlois, Wm. H.—Prize for Chemical Laboratory Work.
Edwards, Wm.—Prizes in Mathematics and Physics.
Fraser, D. C.—Prize for Chemical Laboratory Work.
McKenzie, Bertram S.—Scott Exhibition.
Taylor, Charles W.—Scott Prize of $15.
Ward, Percy W.—Prize for Mechanical Drawing.

PASSED THE SESSIONAL EXAMINATIONS.

(In Order in Merit.)

CIVIL ENGINEERING.

Clement, Sheldon B., Clinton, Ont.
Blanchard, Arthur C. D., Windsor, N.S.
*Gagnon, Edmund E., Montreal, Que.

ELECTRICAL ENGINEERING.

Burson, Herbert A., St. Catharines, Ont.
Fleming, James M., Halifax, N.S.
McLaren, John H., Montreal, Que.
Ward, Percy W., Lachine, Que.

* To pass Supplemental Examination.

Taylor, Charles W., Richwood, Ont.
*Glassco, Archie P. S., Hamilton, Ont.
Lloyd, Herbert M., New Westminster, B.C.
*Higman, Ormond, Ottawa, Ont.

MECHANICAL ENGINEERING.

Fry, David M., Bright, Ont.
*Wilson, Reginald C., Cumberland, Ont.
Scott, Henry M., Montreal, Que.
Cameron, Hugh D., Montreal, Que.
*Hampson, E. Greville, Montreal, Que.
*Lowden, Warden K., Montreal, Que.
*Pyke, Gordon McT., Montreal, Que.
*Wakeling, Otty S., St. John, N.B.

MINING ENGINEERING.

Archer, Augustus R., New York, U.S.A.
Paterson, Charles S., Montreal, Que.
Edwards, William M., Ottawa, Ont.
Fraser, Donald C., New Glasgow, N.S.
DeBlois, William H., Halifax, N.S.
Wilson, Thomas A., Halifax, N.S.
*McKenzie, Bertram S., London, Ont.
Palmer, Ernest E., Toronto, Ont.
Frechette, Howells, Ottawa, Ont.
*White, Gerald V., Pembroke, Ont.
*Flint, William G., Montreal, Que.
*Tupper, Charles, Vancouver, B.C.
*Ritchie, Joseph N., Halifax, N.S.
*Blue, Allan P., Eustis, Que.
*Ogilvie, Paul, Cummings Bridge, Ont.
*Galbraith, Malcolm T., Montreal, Que.

PRACTICAL CHEMISTRY.

Labatt, John S., London, Ont.
*Jamieson, George E. T., Montreal, Que.

FIRST YEAR.

Barwick, William S.—Hutchison Prize for Freehand Drawing.
Campbell, Charles McK.—Hutchison Prize for Freehand Drawing.
Corless, Charles V.—Prizes for Descriptive Geometry, Descriptive Mechanism, English and Mathematics.
Dale-Harris, Spencer.—2nd Fleet Workshop Prize.
Hicks, Thomas N.—2nd Fleet Workshop Prize.
Ralph, Claude E.—Ottawa Valley Graduates' Society Entrance Prize.
Robertson, John F.—Prizes for Chemistry, Practical Chemistry and Mathematics.
Smith, J. Macdonald.—1st Fleet Workshop Prize.
Sterns, Frank E.—Hutchison Prize for Freehand Drawing, 3rd Fleet Workshop Prize, Prize for Descriptive Geometry.

* To pass Supplemental Examination.

PASSED THE SESSIONAL EXAMINATIONS

(In Order of Merit.)

Corless, Charles V., New Durham, Ont
Robertson, John F., Charlottetown, P.E.I.
Sterns, Frank E., Morell, P.E.I.
De Pencier, Henry P., Vancouver, B.C.
Dutcher, Howard K., Charlottetown, P.E.I.
Hicks, Thomas N., Perth, Ont.
Barwick, William S., Barrie, Ont.
Smith, J. Macdonald, Petitcodiac, N.B.
Smith, Gerald, St. Johns, Que.
Addie, Thomas H., Sherbrooke, Que.
Murphy, William E., Shelburne, N.S.
Dunfield, John C. W., St. Johns, Newfoundland.
Bigger, Howell, Ottawa, Ont.
McBride, Wilbert G., Inglewood, Ont.
Campbell, Charles McK., Winnipeg, Man.
*Ralph, Claude E., Ottawa, Ont
Jackson, Philip T., Toronto, Ont.
Mackay, Eric, St. Johns, Newfoundland.
*Coulson, John D., Toronto, Ont.
*Myers, Archie J., Listowell, Ont.
*Weagant, Roy A., Derby Line, Vt., U.S.A.
Dupuis, Albert, Montreal, Que.
*Maclaren, Francis H., Huntingdon, Que.
*Newton, Samuel R., Drummondville, Que.
*Pratt, Stephen S., Cranbrook, B.C.
*Baird, Alexander, Sherbrooke, Que.
*Pearson, Hartley M., Huntingdon, Que.
*Edgar John H., Montreal, Que.

MEDALS (GOVERNOR GENERAL'S) AWARDED FOR GRADUATE RESEARCH WORK.

Aberdeen Medal to Howard T. Barnes, M.A.Sc.
Minto Medal to Tom Percival Strickland, B.Sc., B.A.Sc.

STANDING IN THE SEVERAL SUBJECTS.

ALTERNATING CURRENT WORK.

FOURTH YEAR.—*Class I.*—Archibald, Grier, Fetherstonhaugh and McLea, equal. *Class II.*—Denis and Shaw, equal. *Class III*—Hyde (J. C.), Wilson (R. M.), Fraser (J. W.), Fraser (H.), Bowman, Burgess.

ANALYSIS, QUALITATIVE.

SECOND YEAR.—*Class I.*—DeBlois and Fraser, equal; Patterson, Ritchie, *Class II.*—Cochrane; Archer and Blue and Edwards, equal; McKenzie, Wilson, Jamieson, Burchell; Reynolds and White, equal; Labatt, Ogilvie, Tupper, Galbraith. *Class III.*—Flint, Frechette, Wells, Palmer.

* To pass Supplemental Examination

THIRD YEAR.—*Class I.*—Howard, Gillean, Robertson ; Barber and Buffett and Corriveau and Taylor, equal. *Class II.*—Moore, Cary, Cowans. *Class III.*—Donaldson, Maclaren, Buchanan.

ARCHITECTURAL DRAWING.

SECOND YEAR.—*Class I.*—None. *Class II.*—Hutchings (G. H.). *Class III.*—Hutchings (S.C.), Watson (R. G.).

ARCHITECTURAL DESIGN (SESSIONAL WORK).

FOURTH YEAR.—*Class I.*—None. *Class II.*—Hyde (G. T.), Staveley. *Class III.*—McLeod and Peden, equal.

ARCHITECTURE.

FOURTH YEAR.—*Class I.*—Hyde (G. T.). *Class II.*—Staveley, McLeod. *Class III.*—Peden.

ARCHITECTURE, HISTORY OF.

THIRD YEAR.—*Class I.*—None. *Class II.*—Coote.

SECOND YEAR.—(*Division A.*).—*Class I.*—None. *Class II.*—Hutchings (S. C.), Hutchings (G. H.). *Division B.*—*Class I.*—None. *Class II.*—Clement, Blanchard, Wilson (T. A.). *Class III.*—Gagnon (E. E.).

ARCHITECTURE, THEORY OF.

SECOND YEAR.—*Class I.*—None. *Class II.*—Hutchings (G. H.).

ART HISTORY.

FOURTH YEAR.—*Class I.*—Staveley, Hyde (G. T.) and McLeod (N.M.) equal. *Class II.*—Peden.

ASSAY THEORY.

FOURTH YEAR.—*Class I.*—Blaylock, Kirkpatrick, Yuile, Pitcher, Preston, Campbell (N. M.). *Class II.*—MacInnes, Waller, Morgan.—*Class III.*—Stevens, Moore.

BOTANY.

SECOND YEAR.—*Class I.*—Labatt.

CHEMISTRY.

SECOND YEAR.—(*Practical Chemistry Course*).—*Class I.*—None. *Class II.*—Labatt, Jamieson.

FIRST YEAR.—*Class I*—Robertson (J. F.), Corless, Sterns, Dutcher. *Class II.*—De Pencier, Dunfield, Edgar, Barwick, McBride, Hicks, Weagant, Smith (G.,) Campbell (C. M.). *Class III.*—Addie and Smith (J. M.), equal; Pearson, Jackson, Pratt, Dupuis, Murphy, Mackay, Coulson; Bigger and Porter, equal; Johnston, Maclaren (F. H.); Baird and Horsfall, equal.

CHEMISTRY, INORGANIC.

FOURTH YEAR.—*Class I.*—Hutchinson, MacLaren (A. J.).

CHEMISTRY OF THE METALS.

SECOND YEAR.—*Class II.*—Labatt, Jamieson.

CHEMISTRY, ORGANIC.

FOURTH YEAR.—*Class I.*—Hutchinson. *Class II.*—MacLaren (A. J.).

DESCRIPTIVE GEOMETRY.

THIRD YEAR.—(*Civil Engineering Course*). *Class I.*—None. *Class II.*—Ewart *Class III.*—Corriveau, Byers, Burgoyne.

SECOND YEAR.—*Class I.*—Burson, Wilson (T. A.) *Class II.*—Clement and McLaren (J.), equal; Archer, Fraser (D. C.), Scott (H. E.), Fry, Ward (P. W.), Blanchard; Frechette and Higman, equal; Edwards and Scott (H. M.) and Wilson (R. C.), equal; DeBlois. *Class III.*—Lloyd, Palmer, McKenzie, Cameron, Burchell and Gagnon (E. E.), equal; Flint and Taylor (C. W.), equal; Ritchie and Wakeling, equal; Lowden.

FIRST YEAR.—*Class I.*—Corless and Sterns, equal; De Pencier and Dutcher and Robertson (J. F.), equal; Barwick, Addie; Hicks and Smith (J. M.) equal; Baird; Campbell and Smith (G.), equal; Bigger and Dunfield and Murphy, equal; Pratt. *Class II.*—Jackson and Myers and Newton, equal; Hutchings (G. H.), Ralph; Maclaren (F. H.) and McBride, equal; Weagant, Hutchings (S. C.); Beck and Labelle and Lawrence equal; Mackay; Pearson and Whitley, equal; Porter. *Class III*—Coulson; Dupuis and Peck, equal; Meldrum, Mitchell.

DESCRIPTIVE MECHANISM.

FIRST YEAR.—*Class II*—.Corless, Sterns, Robertson (J. F.), Dunfield; McBride and Smith (J. M.), equal; De Pencier, Dutcher. *Class II.*—Dupuis, Weagant, Pratt, Mathers, Smith (G.); Hicks and Lawrence, equal; Horsfall, Labelle; Bigger and Jackson, equal. *Class III.*—Lockerby: Baird and Mitchell and Whitley, equal; Ralph, Newton, Johnston (F. H.), and Maclaren, equal; Peck and Sewell, equal; Barwick and Beck, equal; Pearson; Murphy and Meldrum, equal; Cape and Coulson, equal; Addie, Kerr, Mackay, Campbell (C. M.).

DESIGNING.

FOURTH YEAR.—(*Civil Engineering Course.*)—*Class I.*—Colpitts. *Class II.*—Gough, Fraser (C. E.), Gagnon (L. F.), Van Horne. *Class III.*—Bachand. (*Mechanical Engineering Course.*)—*Class I.*—McLean, Young, Whyte (J. S.). *Class II.*—Wenger, Durgavel, Davidson, Hickey. *Class III.*—Ewan, Gisborne, Yorston. (*Mining Engineering Course.*)—*Class I.*—Preston. *Class II.*—Morgan, Campbell (N. M.), and Yuile, equal; Blaylock and Pitcher and Kirkpatrick, equal. *Class III*—MacInnes, Moore, Waller.

THIRD YEAR.—(*Architectural Course.*)—*Class I.*—None. *Class II.*—Coote.

THIRD YEAR.—*Civil Engineering Course.*—*Class I.*—Corriveau, Burgoyne; Byers and Ewart, equal. *Class II.*—None. *Class III.*—Anglin.

SECOND YEAR.—(*Architectural Course*). *Class I.*—None. *Class II.*—Hutchings (G. H.)

DETERMINATIVE MINERALOGY.

THIRD YEAR.—*Class I.*—Gillean, Howard (L. O.), Corriveau. *Class II.*—Barber, Cowans (F.), Buffett, Moore (E. V.), Robertson (P. W. K.), Donaldson Cary.

Passed special examination. *Class III.*—Buchanan (F. P.).

DIRECT CURRENT DYNAMO WORK.

FOURTH YEAR.—*Class I.*—None. *Class II.*—Hyde (J. C.); Archibald and Fetherstonhaugh, equal; Wilson (R. M).; Grier and Shaw, equal. *Class III.*—Denis and Fraser (J. W.) and McLea, equal; Fraser (H.) Burgess, Bowman.

THIRD YEAR.—*Class I.*—Nelson. *Class II.*—Allen. *Class III.*—Black and Duncan and Miller (A. K.), equal; Montgomery, St. George, Forman Fraser (John W.), Glassco (J. G.).

DYNAMICS OF MACHINERY.

FOURTH YEAR.—(*Electrical Engineering Course*).—*Class I.*—Grier; Archibald (E. M.) and Fetherstonhaugh, equal. *Class II.*—Hyde (J. C.), Bowman, Shaw; Denis and Wilson (R. M.), equal; Fraser (J. W.). *Class III.*—Burgess, Pergau, Fraser (H.) and McLea, equal; Hawker. (*Mechanical Engineering Course*).—*Class I.*—McLean (W. B.), Young, Dargavel. *Class II.*—Wenger, Davidson, Whyte (J. S.). *Class III.*—Hickey; Austin and Gisborne, equal; Ewan, Yorston.

THIRD YEAR.—*Class I.*—Walker; Allen and Neville, equal; Nelson. *Class II.*—Arkley, Macmaster, Shepherd, Hamilton, Miller (A. K.), Black, Duncan, Glassco (J G.). *Class III.*—St. George, Montgomery, Osborne, Sise, Percy, Forman, Fraser (John W.).

ELECTRIC LIGHTING.

FOURTH YEAR.—*Class I.*—Wilson (B. M.), Archibald, Shaw, Hyde (J. C.); Fetherstonhaugh and Grier, equal; Burgess and Denis, equal. *Class II.*—Bowman; Fraser (J. W.) and Hawker and Pergau, equal; Fraser (H.). *Class III.*—McLea.

ELECTRIC RAILWAYS.

FOURTH YEAR.—*Class I.*—Wilson (R. M.); Fetherstonhaugh and Shaw, equal; Archibald and Hyde (J. C.) equal. *Class II.*—Denis and Fraser (J. W. and Grier, equal; Bowman, McLea. *Class III.*—Burgess, Fraser (H.).

ELECTROMAGNETISM.

THIRD YEAR.—*Class I.*—Allen, Nelson. *Class II.*—Montgomery, Miller (A.), Glassco (J. C.), Percy; Black and Forman, equal. *Class III.*—Duncan and St. George, equal; Fraser (John W.).

ENGLISH.

FIRST YEAR.—*Class I.*—Corless, Dutcher, DePencier, Campbell (C. M.), Sterns, Robertson (J. F.), Ralph, Dunfield. *Class II.*—Addie and McBride and Murphy, equal; Bigger; Hicks and Smith (G.), equal; Barwick and Horsfall, equal; Coulson, Edgar, Cushing. *Class III.*—Hutchings (S. C.), Newton, Lockerby; Dupuis and Pearson, equal; Baird; Pratt and Mackay, equal; Crawford and Peck and Smith (J. M.), equal; Jackson; MacLaren (F. H.) and Porter and Sewell, equal; Hutchings (G. H.), Cape, Labelle, Myers.

FREEHAND DRAWING.

FOURTH YEAR.—(*Architectural Course*) —*Class I.*—None. *Class II.*—Hyde (G. T.) *Class III.*—Peden, McLeod (N. M.), Staveley.

THIRD YEAR.—(*Architectural Course*).—*Class I.*—None. *Class II.*—Coote.

SECOND YEAR.—(*Architectural Course*).—*Class I.*—None. *Class II.*—Hutchings (G. H.).

FIRST YEAR.—*Class I.*—Barwick and Campbell (C. M.) and Sterns, equal; Dutcher and Hutchings (G. H.), equal; Hutchings (S. C.); Corless, Robertson (J. F.); Baird and Bigger, equal; Labelle; Beck; Addie and DePencier and Hicks, equal; McLean (D. J.) and Pratt and Smith (C.), equal. *Class II.*—Barclay and Whitley, equal; Crawford and Horsfall and Porter and Smith (J. M.), equal; Brainerd and Lawrence and McBride, equal; Myers; Edgar and Murphy and Newton, equal; Whiteway F. H. C.), Jackson; Mathers and Trenholme, equal. *Class III.*—Lockerby and Meldrum and Ralph and Smith (R. E.). equal; Dunfield and Weagant, equal; Cowen (E. A. A.) and Johnston and McLaren (F. H.) and Pearson, equal; Coulson and Dupuis, equal; Boyd, Onderdonk, Ward (R.); Cushing and Mackay and Sewell, equal.

GEODESY.

FOURTH YEAR.—*Class I.*—Colpitts. *Class II.*—Fraser (C. E.), Corriveau, Bachand, Gagnon (L. F.). *Class III.*—Gough, Van Horné.

GEOLOGY.

FOURTH YEAR.—(*Architectural Course*).—*Class I.*—Hyde (G. T.). *Class II.*—McLeod, Pedeu.

THIRD YEAR.—*Class I.*—Gillean, Ewart. *Class II.*—Byers; Buffett and Cary, equal; Barber, Robertson P. W. K.), Cowans (F.), Howard (L.). *Class III.*—Burgoyne, Donaldson, Maclaren (G. M.), Moore (E. V.).

GEOLOGY (ADVANCED).

FOURTH YEAR.—*Class I.*—Kirkpatrick, Blaylock, Campbell (N. M). *Class II.*—Yuile, Pitcher, MacInnes, Moore (W. A.) and Preston, equal; Morgan. *Class III.*—Waller, Stevens.

GRAPHICAL STATICS.

FOURTH YEAR.—*Class I.*—Colpitts. *Class II.*—Fraser (C. E.), Gough, Gagnon (L. F.). *Class III.*—Van Horne, Bachand.

THIRD YEAR—*Class I.*—Allen and Black, equal; Walker, Hamilton (G. M.), St George. *Class II.*—Montgomery; Neville and Shepherd, equal; Buffett; Gillean and Miller (A. K.), equal; Burgoyne, Percy; Cowans (F.) and Macmaster and Nelson, equal; Arkley; Duncan and Smith (G. B.), equal; Byers and Moore (E. V.), equal. *Class III.*—Fraser (John W.), Osborne, Ewart; Buchanan (F. P.) and Glassco (J. G.) and Robertson (P. W. K.), equal; Maclaren.) Corriveau and Sise, equal.

HYDRAULICS.

FOURTH YEAR.—(*Civil, Electrical and Mechanical Engineering Courses*).—*Class I.* Archibald, Colpitts, Grier. *Class II.*—McLean (W.), Fraser (C. E.), Fetherstonhaugh, Fraser (J. W.), Young; Denis and Wilson (R. M.) equal; Austin, Van Horne, Gisborne, Burgess and Shaw, equal. *Class III.*—Ewan, Gagnon (L. F.), Wenger, Dargavel, Gough, Bowman, Hickey, Whyte; Bachand and Davidson, equal; Hyde (J. C.), Fraser (H.). (*Mining Engineering Course*). *Class I.*—None. *Class II.*—Blaylock, Preston, Kirkpatrick, Yuile. *Class III.*—Morgan, MacInnes, Moore, Stevens, Campbell (N. M.), Nicholls Waller, Hyde (J.), Fraser (H.)

HYDRAULIC MACHINERY.

FOURTH YEAR—*Class I.*—McLean, Fetherstonhaugh and Grier and Whyte (J.S.), equal; Colpitts and Shaw, equal; Bowman; Fraser (C. E.) and Fraser (J. W.), equal. *Class II.*—Archibald and Burgess and Gough, equal; Young; Hickey and Davidson, equal; Denis and Ewan and Gagnon (L. F.) and Gisborne, equal; Hyde (J. C.) and Wenger, equal. *Class III.*—Dargavel and Hawker, equal; Wilson (R. M.), Van Horne; Austin and Pergau, equal; Fraser (H.).

KINEMATICS.

SECOND YEAR.—*Class I.*—Burson. *Class II.*—Flening, Wakeling, Wilson (T. A.), Howard (R. T.); Higman and Ward (P. W.), equal. *Class III.*—McLaren (J. H.) and Taylor (C. W.), equal; Fry and Glassco (A. P. S.), equal; Hampson, Scott (H. M.), Pyke, Lloyd, Cowen (E. A. A.), Lowden, Cameron, Brecken, Boyd.

LABORATORY WORK.

FOURTH YEAR.—(*Assay Laboratory*).—*Class I.*—Blaylock, MacInnes, Yuile, Pitcher. *Class II.*—Preston, Kirkpatrick, Waller, Campbell (N. M.), Morgan, Moore, Stevens.

FOURTH YEAR.—(*Cement Testing Laboratory*).—*Class I.*—Peden; Hyde (G. T.) and McLeod (N. M.) and Staveley, equal.

FOURTH YEAR.—(*Chemical Laboratory*).—*Class I.*—Hutchinson. *Class II.*—None. *Class III.*—MacLaren (A. J.).

THIRD YEAR.—(*Chemical Laboratory, Mining Engineering Course*).—*Class I.*—Howard (L. O.), Gillean, Robertson (P. W. K.); Buffett and Corriveau and Taylor (A. M.), equal. *Class II.*—Moore (E. V.), Cary, Cowans (F.) *Class III.*—Donaldson, *Maclaren (G. M.), *Buchanan (F. P.). *Chemistry Course*).—*Class I.*—Barber.

SECOND YEAR.—(*Chemical Laboratory, Mining Engineering Course*).—*Class I.*—DeBlois and Fraser (D. C.), equal; Paterson, Ritchie. *Class II*—Archer and Blue and Edwards, equal; McKenzie (B. S.), Wilson (T. A.), Burchell; Reynolds and White (G. V.), equal; Ogilvie (P.), Tupper, Galbraith. *Class III.*—*Flint, Fréchette, Vells, Palmer. (*Chemistry Course*).—*Class. I.*—None. *Class II.*—Jameson, Labatt.

* Supplemental.

FIRST YEAR.—(*Chemical Laboratory*).—*Class I.*—Robertson (J. F.), Corless, Sterns, Mackay; DePencier and Dunfield, equal; Edgar; Murphy and Barwick, equal; Dutcher; Pratt and Coulson, equal; Hicks and Weagant, equal; Pearson, Porter; Newton and Smith (J. M.), equal; Maclaren (F. H.) Smith (G.). *Class II.*—Addie and Bigger and Jackson and McBride, equal; Whitley, Baird; Mathers and Myers, equal; Ralph, Lockerby, Campbell (C. M.) and Dupuis, equal; Peck; Beck and Horsfall, equal; Crawford, Johnston, Brainerd. *Class III.*—Cape and Kerr, equal; Whiteway (F. H. C.), Sewell.

FOURTH YEAR.—(*Electrical Laboratory*).—*Class I.*—Wilson (R. M.), Denis, Fetherstonhaugh and Grier, equal; Archibald, Shaw. *Class II.*—Hyde (J. C.), Burgess, Bowman, Fraser (J. W.), McLea. *Class III.*—Fraser (H.) and Hawker, equal; Pergau.

THIRD YEAR.—(*Electrical Laboratory*).—*Class I.*—Allen, Montgomery, Nelson. *Class II.*—Glassco (J. C.); Duncan and Miller (A. K.) and Percy, equal; Black, Fraser (John W.). *Class III.*—Kane, Forman.

FOURTH YEAR.—(*Geodetic Laboratory*).—*Class I.*—Colpitts, Fraser (C. E.). *Class II.*—Gough. *Class III.*—Bachand; Gagnon (L. F.) and Van Horne, equal.

FOURTH YEAR.—(*Hydraulic Laboratory*), (*Civil, Mechanical and Electrical Engineering Courses*).—*Class I.*—Archibald, Burgess, Young, McLean (W. B.); Denis and Fraser (J. W.) and Hyde (J. C.), equal; Fetherstonhaugh; Colpitts and Grier, equal; Pergau. *Class II.*—Fraser (C. E.) and Shaw, equal; Davidson and Wilson (R.M.), equal; Austin; Dargavel and Gagnon (L. F.) and Gough, equal; Gisborne, Whyte (J. S.), Hawker, Bowman. *Class III.*—Yorston; Ewan and Hickey, equal; Fraser (H.), Wenger, Bachand, Van Horne.

FIRST YEAR.—(*Mathematical Laboratory*).—*Class I.*—Corless, Sterns; De Pencier and Robertson (J. F.), equal; Mackay and Scott (H. E.), equal; Smith (G.), Dutcher; Addie and Barwick and Ralph, equal; Maclaren (F. H.), and McBride and Murphy and Newton and Pearson, equal; Bigger; Dunfield and Hicks and Smith (J. M.) and Weagant, equal. *Class II.*—Myers and Pratt, equal; Campbell (C. M.) and Coulson and Lockerby and Peck, equal; Dupuis; Horsfall and Hutchings (S. C.) and Jackson and Lawrence, equal; Beck and Crawford and Mathers, equal; Cape and Whitley, equal; Baird.

FOURTH YEAR.—(*Mechanical Engineering Laboratory*).—*Class I.*—McLean (W. B.); Dargavel and Young, equal. *Class II.*—Wenger, Whyte (J. S.) Davidson. *Class III.*—Gisborne, Yorston, Hickey, Austin, Ewan.

FOURTH YEAR.—(*Mining Laboratory*).—*Class I.*—Kirkpatrick, Morgan; Blaylock and Pitcher and Preston and Yuile, equal. *Class II.*—Campbell (N. M.), McInnes, Moore (W. A.), Waller.

FOURTH YEAR.—(*Physical Laboratory.*) (*Electrical Engineering Course*),—*Class I.*—Grier, Archibald, Denis, Wilson (R. M.). *Class II.*—Fraser (J. W.); Fetherstonhaugh and Shaw, equal; Burgess and Hyde (J. C.), Bowman. *Class III.*—Fraser (H.)

THIRD YEAR.—(*Physical Laboratory.*) (*Electrical Engineering Course*)—*Class I.*—Duncan, Nelson, Black. *Class II.*—Allen, Miller (A. K.) St. George. *Class III.*—Howard (R. T.), Montgomery, Glassco (J. G.), Fraser (John W.)

SECOND YEAR.—(*Physical Laboratory.*) (*Architectural, Civil, Electrical, Mechanical Engineering Courses and Practical Chemistry Course.*)—*Class I.*—Scott (H. M.), Scott (H. E.), Labatt; Burson and Cameron, equal; Clement, Burwell, Cowen (E. A. A.), Pyke, McLaren. *Class II.*—Jamieson; Fry and Gagnon (E. E.) and Hampson and Lowden and Wakeling and Ward (P. W.), equal: Fleming and Taylor (C. W.), equal; Glassco (A. P. S.) and Wilson (R. C.), equal; Brecken, Lloyd, Boyd, Schwitzer. *Class III.*—Higman. (*Mining Engineering Course*).—*Cla I.*—Palmer, Paterson, DeBlois, Edwards. *Class II.*—Archer and Fraser (D. C.) and Galbraith and White (G. V.) and Wilson (T. A.), equal; Ritchie and Flint and Ogilvie (P.), equal; Burchell, Wells; Blue and McKenzie, equal; Tupper and Frechette, equal. *Class III.*—Reynolds.

FOURTH YEAR.—(*Testing Laboratory.*) (*Architectural Course*)—*Class I.*—Peden McLeod (N. M.). *Class II.*—Hyde (G. T.). (*Civil Engineering Course*). *Class I.*—Fraser (C. E.) and Gough, equal; Colpitts; Bachand and Gagnon (L. F.) and Van Horne, equal.

THIRD YEAR.—(*Testing Laboratory*).—*Class I.*—Black, Shepherd, Walker; Allen and Burgoyne and Nelson, equal; Robertson (P. W. K.), Percy. *Class II.*—Buffett; Duncan and Gillean, equal; Neville, Fraser (John W.), Smith (G. B.), St. George; Byers and Hamilton and Montgomery, equal; Moore (E. V.) and Sise, equal; Miller (A. K.), Osborne, Buchanan (F. P.), Glassco (J. G.). *Class III.*—Ewart; Arkley and Macmaster, equal; Cowans (F.); Cary and Donaldson and Macmillan, equal.

LETTERING.

FIRST YEAR.—*Class I.*—Campbell (C. M.); Addie and Baird and DePencier and Hutchings (S. C.), equal; Hutchings (G. H.) and Pratt, equal; Biggar and Dutcher, equal; Barwick and Beck and Hicks and Sterns, equal; Corless and Robertson (J. F.), equal; Edgar; Brainerd and Smith G.), equal; Porter. *Class II.*—McBride and Murphy, equal; Myers and Newton and Smith (J. M.) and Whitley, equal; Dupuis; Crawford and Lawrence, equal; Sewell, McLean (D. J.); Jackson and Mathers, equal; Dunfield and Horsfall, equal; Coulson and Whiteway (F. H. C.), Smith (R. E.). *Class III.*—Johnson and Maclaren (F. H.), equal; Kerr and Mackay and Trenholme, equal; Cummings; Labelle and Pearson, equal; Ralph and Yuile (H.), equal; Lockerby and Ward (R.) and Weagant, equal.

MACHINE DESIGN.

FOURTH YEAR.—(*Electrical Engineering Course.*)—*Class I.*—Grier, Fraser (J. W.), Denis, Archibald. *Class II.*—Shaw, Hyde (J. C.); Fraser (H.) and Wilson (R. M.). *Class III.*—Burgess and Fetherstonhaugh, equal; Bowman, Pergau. (*Mechanical Engineering Course.*)—*Class I.*—McLean, Young. *Class II.*—Wenger, Dargavel, Whyte (J. S.). *Class III.*—Austin; Davidson and Gisborne; Yorston, Ewan.

THIRD YEAR.—(*Electrical and Mechanical Engineering Course.*)—*Class I.*—Percy; Allen and Black, equal; Shepherd; Duncan and Hamilton and Neville and St. George and Walker, equal. *Class II.*—Arkley; Miller (A. K.) and Montgomery, equal; Osborne, Macmaster, Nelson, Smith (G. B.). *Class III.*—Fraser (J. W.), Glassco (J. G.), Forman, Sise.

MAPPING.

THIRD YEAR.—*Class I.*—None. *Class II.*—Burgoyne, Anglin, Ewart, Byers.

SECOND YEAR.—(*Civil Engineering Course.*)—*Class I.*—Gagnon (E. E.). *Class II.*—Blanchard, Clement. (*Mining Engineering Course.*)—*Class I.*—Archer, Frechette. *Class II.*—Fraser (D. C.); McKenzie and Paterson, equal; Galbraith; Blue and Burchell and DeBlois and Edwards, equal; Palmer, White (G. V.). *Class III.*—Askwith, Ogilvie (P.), Flint; Ritchie and Tupper, equal.

MATHEMATICS.

THIRD YEAR.—*Class I.*—Shepherd, Gillean, Allen. *Class II.*—Percy, Nelson, Miller (A. K.), Neville, Corriveau, Buffett; Duncan and Robertson (P. W. K.), equal; Walker, Hamilton, Cowans (F.). *Class III.*—Ewart, Glassco (J. G.), Maclaren (G. M.), Arkley, Montgomery; Byers and Osborne, equal; Fraser (John W) and Moore (E. V.), equal; Smith (G. B.), Macmaster, Burgoyne, Donaldson.

SECOND YEAR.—*Class I.*—Edwards, Fleming, Burson, Archer, Clement, McKenzie, Fraser (D. C.), Fry, McLaren (J.). *Class II.*—Paterson, Taylor (C. W.), Tupper, Glassco (A. P. S.); DeBlois and Wilson (T. A.), equal; Palmer, Ward (P. W.), White (G. V.), Blanchard, Hampson. *Class III.*—Frechette, Ritchie, Reynolds, Cameron, Scott (H. M.), Flint, Blue, Lloyd, *Higman; Pyke and †Wilson (R. C.), equal; *Ogilvie (P.); Galbraith and †Lowden, equal.

FIRST YEAR.—*Class I.*—Corless, Robertson (J. F.), Sterns, DePencier, Dutcher, Scott (H. E.). *Class II.*—Hicks, Smith (J. M.), Murphy, Barwick, Smith (G.), Ralph, Addie, Bigger, Mackay, Jackson, Meyers, Dunfield, McBride. *Class III.*—‡Mathers, *Coulson, *Weagant; Campbell (C. M.) and Dupuis, equal; *McLaren, *Newton.

MECHANICAL DRAWING.

THIRD YEAR.—(*Electrical Engineering Course.*)—*Class I.*—Black, Allen. *Class II.*—Nelson, Miller (A. K.), Duncan, St. George, Glassco (J. G.) Howard (R. T.), Montgomery. *Class III.*—Fraser (John W.), Forman. (*Mechanical Engineering Course*).—*Class I.*—Shepherd, Hamilton, Smith (G. B.). *Class II.*—Walker, Arkley, Percy, McLean (D. J.), Macmaster. *Class III.*—Osborne, Sise, Neville. (*Mining Engineeering Course.*)—*Class I.*—None. *Class II.*—Corriveau, Gillean, Buffett. *Class III.*—Cary, Buchanan (F. P.), Cowans (F.), Robertson (P. W. K.).

SECOND YEAR.—*Class I.*—Ward (P. W.), Burson; Archer and Fry, equal. *Class II.*—DeBlois and Lloyd, equal; McKenzie and Paterson, equal;

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*Supplemental in Mechanics.
† " " Calculus.
‡ " " Algebra.

Edwards and Frechette and Palmer, equal ; Fleming ; Scott (H. E.) and White (G. V.), equal ; Wakeling ; Brecken and Burwell and Fraser (D. C.), equal ; McLaren (J. H.) ; Taylor (C. W.) and Scott (H. M.), equal. *Class III.*—Galbraith and Lowden, equal ; Wilson (R. C.) and Wilson (T. A.), equal ; Cameron, Hampson, Tupper ; Blue and Cowen (E. A. A.), equal ; Boyd ; Burchell and Higman, equal ; Glassco (A. P. S.) and Ogilvie (P.), equal ; Flint, Ritchie, Kane ; Pyke and Wells, equal.

MECHANICAL ENGINEERING.

FOURTH YEAR.—*Class I.*—Dargavel and MacLean (W. B.), equal ; Wenger and Whyte (J. S.) and Young, equal. *Class II.*—Davidson, Hickey. *Class III.*—Ewan and Gisborne, equal ; Austin, Yorston.

METALLURGY.

FOURTH YEAR.—*Class I.*—Kirkpatrick, Yuile ; Blaylock and Pitcher, equal ; Campbell (N. M.), Waller. *Class II.*—Moore, MacInnes, Morgan, Preston, Stevens.

METALLURGY (COPPER AND LEAD.)

THIRD YEAR.—*Class I.*—Gillean. *Class II.*—Robertson (P. W. K.), Buffett, Howard (L. O.). *Class III.*—Barber, Donaldson, Corriveau, Moore (E. V.), Cowans (F.), Buchanan, Cary, MacMillan.

METALLURGY (IRON AND STEEL).

THIRD YEAR.—*Class I.*—Gillean, Robertson (P. W. K.), Shepherd, Corriveau. *Class II.*—Buffett ; Moore (E. V.) and Barber and Howard (L. O.), equal ; Buchanan (F. P.), Arkley, Cowans (F.), Walker ; Neville and Osborne and Macmillan, equal. *Class III.*—Cary, Percy, Smith (G. B.), Millar (J. L.), Donaldson, Macmaster, Hamilton, Sise.

MINERALOGY (ADVANCED).

FOURTH YEAR.—(*Mining Engineering Course.*)—*Class I.*—Kirkpatrick, Preston, Campbell (N. M.). *Class II.*—Yuile ; Pitcher and Waller, equal ; MacInnes, Blaylock, Stevens, Moore. *Class III.*—Morgan. *Practical Chemistry Course.*)—*Class I.*—Hutchinson. *Class II.*—MacLaren (A. J.).

THIRD YEAR.—*Class I.*—None. *Class II.*—Corriveau, Gillean ; Howard (L. O.) and Robertson (P. W. K.), equal ; Moore (E. V.), Cowans (F.). *Class III.*—Buffett, Cary, Barber.

Passed Special Examination :—*Class III.*—Buchanan (F. P.),

MINERALOGY, DETERMINATIVE

THIRD YEAR.—*Class I.*—Gillean, Howard, Corriveau. *Class II.*—Barber, Cowans, Buffett, Moore, Robertson, Donaldson, Cary, *Class III.*—Buchanan.

MINING.

FOURTH YEAR.—*Class I.*—Preston, Blaylock. *Class II.*—Kirkpatrick, Campbell (N. M.), Yuile ; Pitcher and Moore, equal ; MacInnes, Morgan. *Class III.*—Waller.

SECOND YEAR.—*Class I.*—Paterson ; Blue and Frechette, equal ; Burson ; Edwards and Ward (P. W.), equal ; Clement, Wilson (T. A.). *Class II.*—

Blanchard and Labatt, equal; Wilson (R. C.); Archer and Reynolds, equal; Fleming; Lloyd and Ritchie, equal; Fraser (D. C.) and McLaren (J. H.) and Wakeling, equal; DeBlois and Palmer, equal; Higman and Jamieson and White (G. V.), equal; Flint and Fry, equal. *Class III.*—Brecken and Burchell and Cameron and Hampson and McKenzie and Ogilvie (P.), equal; Galbraith and Lowden, equal; Tupper and Glassco (A. P. S.), Taylor (C. W.); Boyd and Burwell and Gagnon (E. E.) and Howard (R. F.) and Scott) H. M.) equal; Cowen (E. A. A.).

MINING THESIS.

FOURTH YEAR.—*Class I.*—Kirpatrick and Moore (W. A.), equal; Morgan. *Class II.*—Blaylock and Yuile and MacInnes, equal; Campbell (N. M.); Pitcher and Preston, equal. *Class III.*—Waller, Stevens.

MODELLING IN CLAY.

FOURTH YEAR.—(*Architectural Course*).—*Class II.*—McLeod (N. M.) and Peden, equal; Hyde (G. T.), Staveley.

MUNICIPAL ENGINEERING (ROADS, ETC.).

FOURTH YEAR.—*Class I.*—Fraser (C. E.), Colpitts. *Class II.*—Gough, Van Horne, Gagnon (L. F.). *Class III.*—Bachand.

MUNICIPAL ENGINEERING (SANITARY).

THIRD AND FOURTH YEARS. *Class I.*—Colpitts, Byers, Fraser (C. E.).—*Class II.*—Ewart, Van Horne; Gagnon (L. F.) and Gough, equal. *Class III.*—Burgoyne, Corriveau, Bachand.

ORE DRESSING.

FOURTH YEAR.—*Class I.*—Kirkpatrick, Pitcher. *Class II.*—Blaylock, Campbell (N. M.), Yuile; Morgan and Moore, equal. *Class III.*—Waller, McInnes Preston.

PHYSICS.

THIRD YEAR.—(*Architectural, Civil, Mechanical and Mining Engineering Courses*).—*Class I.*—Shepherd. *Class II.*—Walker, Gillean; Arkley and Byers and Percy, equal; Ewart. *Class III.*—Barber; Moore (E. V.) and Buffett and Smith (G. B.), equal; Burgoyne, Neville, Osborne, Robertson (P. W. K.), MacMaster, Buchanan (F. P.), Cowans (F.), Hamilton.—(*Electrical Engineering Course*).—*Class I.*—Allen and Black, equal; Nelson. *Class II.*—Duncan. *Class III.*—Millar (A. K.), Fraser (John W.), Glassco (J. G.), St. George, Montgomery.

SECOND YEAR.—*Class I.*—Clement and Edwards, equal; Burson, Scott (H. E.), Fleming; Fraser (D. C.), Paterson, Ward (P. W.); DeBlois and Taylor (C. W.), equal; McLaren (J. H.), Wilson (T. A.), Glassco (A. P. S.), Blanchard, Palmer. *Class II.*—Labatt, Fry, Gagnon (E. E.), Wilson

(R. C.); Frechette and McKenzie, equal; Blue and Flint and Hampson and Scott (H. M.), equal. *Class III.*—Lloyd; Archer and Ogilvie (P.), equal; Cameron, Ritchie, Wakeling, Pyke, Tupper, White (G. V.); Boyd and Lowden, equal; Higman, Burwell, Jamieson, Cowen (E. A. A.).

RAILWAY WORK.

FOURTH YEAR.—(*Civil and Mining Engineering Courses*).—*Class I.*—Colpitts. *Class II.*—Blaylock and Gough, equal; Fraser (C. E.); Gagnon (L. F.), Kirkpatrick and Morgan, equal; Campbell (N. M.), MacInnes. *Class III.*—Van Horne; Preston and Yuile, equal; Waller, Moore, Pitcher.

THIRD YEAR.—(*Civil Engineering Course*).—*Class I.*—Ewart. *Class II.*—Byers. *Class III.*—Burgoyne and Corriveau, equal.

SHOPWORK.

FOURTH YEAR.—*Class I.*—Young, White (J. S.), McLean (W. B.), Gisborne, Wenger. *Class II.*—Dargavel, Hickey, Davidson. *Class III.*—Austin, Ewan, Yorston.

THIRD YEAR.—*Class I.*—Black, Fraser (John W.); Hamilton and Smith (G. B.), equal. *Class II.*—Duncan and Shepherd, equal; Miller (A. K.), Arkley; St. George and Walker, equal; Forman, Allen; Miller J. N.) and Montgomery, equal. *Class III.*—Macmaster and Nelson and Neville and Osborne, equal; Coussirat and Glassco (J. G.) and Percy, equal.

SECOND YEAR.—*Class I.*—Fry, Burson, Ward (P. W.), Wilson (R. C.), McLaren (J. A.). *Class II.*—Fraser (D. C.), Taylor (C. W.), Lowden, Cameron; Frechette and Higman and Wakeling, equal; Fleming, Lloyd; Burchell and Hampson, equal; Galbraith and Sise and Wells, equal; Cowen (E. A. A.) and Paterson, equal; Scott (H. M.), Clement, Brecken *Class III.*—Glassco (A. P. S.) and White (G. W.), equal; Flint and Ritchie, equal; Mitchell and Tupper, equal; Blue; Pyke and Wilson (T. A.), equal; Edwards, Gagnon (E. E.), Ogilvie (P.), DeBlois.

FIRST YEAR.—*Class I.*—Corless, Hicks, Smith (J. M.), Sterns. *Class II.*—De Pencier and Johnston, equal; Dutcher; Campbell (C. M.) and Horsfall, equal; Baird and McBride, equal; Barwick and Murphy and Pratt and Whitley, equal; Porter and Robertson (J. F.), equal; Bigger and Dunfield and Kerr, equal; Lawrence, Labelle; Beck and Pearson, equal; Addie and Hutchings (G. H.) and Jackson and Lockerby and Maclaren (F. H.) and Newton and Smith (G.), equal. *Class III.*—Brainerd and Crawford and Trenholme, equal; Hutchings (H. C.) and Prefontaine and Smith (R. E.) and Weagant, equal; Meyers and Ralph and Trimingham, equal; Beauchamp and Edgar and Wood equal; Coulson and Dupuis, equal; Cummings and Whiteway (F. H. C.), equal; Browne and Larin and Sewell, equal; Dobbin and Hayne and Yuile (H.) equal; Mackay.

SPECIFICATIONS AND WORKING DRAWINGS.

FOURTH YEAR.—(*Architectural Course*).—*Class I.*—Staveley, Hyde (G. T.). *Class II.*—Peden, McLeod (N. M.)

SUMMER SCHOOL (MINING).

FOURTH YEAR.—*Class I.*—Morgan, Blaylock, Preston; Kirkpatrick and Pitcher and Yuile, equal. *Class II.*—Campbell; MacInnes and Moore (W. M.) and Waller, equal; Stevens. *Class III.*—Nicholls.

SUMMER WORK.

FOURTH YEAR.—*Class I.*—Colpitts (*Design for Steel Trestle*) and Wilson (R. M.) (*Testing* 12,000 *Volt two-phase Generators*), equal; Archibald (E. M.), *The Distribution of Electrical Power*) and McLean (W. P.) (*Notes on Shaft Governors*) equal; McLeod (N. M.) *Summer Cottage and Steel Details*); Hutchinson (*Experiments on the Condensation of Chloroform with phenylactic ether and benzyl cyanide*) and Hyde (G. T.) (*Design of Cottage and Architectural Details*) and Pitcher (*The Coal Washing Plant of the Dominion Coal Company, Little Glace, C. B.*), equal; Gagnon (L. F.) (*Plan of Sewage System of Town of Westmount*) and Hickey (*Design of Crane*), equal; Grier (15,000-*lb. Portable Crane*) and Kirkpatrick (*Coal Mining in Cape Breton*) and Preston (*Coal Mining in Cape Breton*) and Shaw (*Visit to Chambly Electric Mfg. Company's Works*), equal; Dargavel (*Drawings of Crane*) and Denis (*Design of* 7½ *ton Travelling Crane*) and Morgan (*Mining Wealth of Nova Scotia*), equal; Yuile (*Coal Carrying, Haulage and Transportation*); Bowman (*Design and Drawing of High Pressure Condensing Marine Engine*) and White (J. S.) (15,000 *lbs. Jib Crane*) and Young (*The Erection of Locomotives*) equal. *Class II.*—Bachand (*Notes on Construction of the Telford and Macadam Broken-Stone Pavements*) and Fraser (C. E.) (*Railway Location, C. P. R. Toronto-Sudbury Line*) and Fraser (J. W.) (*Crane Design and Calculations*) and Hyde (J. C.) (*The Chambly Power House*) and MacLaren (A. J.) (*The Benzo Purpurine Dyes*), equal; Campbell (N. M.) (*Coal Mining in Cape Breton*) and Gisborne (*Design of Crane*) equal; MacInnes (*Coal Mining in Cape Breton*) and Moore (*Coal Mining in Cape Breton*) equal; Peden (*Design of Summer Cottage*); Blaylock (*Surface Plant, Caledonian Mines*) and Fetherstonhaugh (*Design of Portable Jib Crane*) and Gough (*The Campbell's Brook Embankment and Culvert, N.S.*), equal; Ewan (*Design of Crane*) and Pergau (*Design of Crane*) and Van Horne, *Map of Covenhoven Minister's Island, St. Andrews*) and Waller (*The Hub Colliery*) and Wenger (*Design of Travelling Crane*), equal. *Class III.*—Burgess (*Design of Portable Hand Crane to lift* 15,000 *lbs.*); Austin (*Travelling Crane*) and Davidson (*Reconstruction of Victoria Bridge*) and Hawker (7½ *ton Portable Crane*) and Nicholls (*Coal Mining*), equal; Fraser (H.) (*Railway Crane*) and Stevens (*Coal Mining in Cape Breton*), equal.

THIRD YEAR.—*Class I.*—Ewart (*Survey of Horizon from Tower on Mt. Royal*), Shepherd (*Drawings of Bicycle*), Smith (G. B.) (*Drawings of Bicycle*). *Class II.*— Hamilton (G. M.) (*Drawings of Bicycle*) and Robertson (P. W. K.) (*Coal Mining in Cape Breton*), equal; Miller (A. K.) (*The Evans & Dodge Four-Point Bearing*); Macmillan (*Coal Mining in Cape Breton*); Gillean (*Manufacture of Salt by Vacuum Process*); Anglin (*Drawings, Sketches and Architectural Details*) and Cowans (F.) (*Manufacture of Charcoal Pig Iron*),

equal ; Donaldson (*Coal Mining at Thacker Pt., Vt.*) ; Duncan (*Drawings of Bicycle*) ; Buffett (*Some Economic Minerals of Newfoundland*) and Byers (*Measured Blue Prints of Library Building*) and Corriveau (*Harbour Surveys, Magdalen Islands, Que.*) and Howard (L. O.) (*Modern High Explosives*), equal ; Allen (*Drawings of Columbia* 1896 *Model Bicycle*) and Nelson (*Kensington Cycle*), equal ; Coote (*Sketches*) ; Moore (E. V.) (*Gold Mining*) ; Glassco (J. G.) (*Drawings of Columbia Bicycle*). *Class III.*—Buchanan (F. P.) (*Plan of Part of Bancroft Farm and of Camp Mohegan*) and Burgoyne (*Chain Survey of Middlemore Farm*) and Maclaren (G. M.) (*Ida May Gold Mine*) and Montgomery (*Bicycle Crank Hanger and Rear Hub Bearings*), equal ; Fraser (John W.) (*Bicycle Drawings*) ; Percy (*Bicycle Axle and Bearings*) and St. George (*Drawings of Bicycle*), equal ; Walker (*Drawings of Bicycle*) ; Burwell (*Drawings of Bicycle Axle and Bearings*) ; Forman (*Drawings of Bicycle Axle and Bearings*) and Macmaster (*Drawings of Bicycle Axle and Bearings*), equal ; Howard (R.) (*Drawings of Bicycle Axle and Bearings*) ; Cary (*The Salt Industry of Ontario*) ; Arkley (*Working Drawings of Bicycle*) ; Black (*Welland Vale Bicycle*) ; Sise (*Design of Bicycle*) ; Neville (*Drawings of Bicycle Axle and Bearings*) ; Osborne (*Design of Bicycle*)

SURVEYING.

THIRD YEAR.—(*Civil and Mining Engineering Courses.*)—*Class I.*—Ewart. *Class II.*—Gillean, Buffett. *Class III.*—Burgoyne and Robertson (P. W. K.) equal ; *Buchanan (F. P.) ; Cowan, *Byers, *Moore (E.), *Donaldson, *Cary.

SECOND YEAR.—(*Civil and Mining Courses.*)—*Class I.*—Clement, Archer ; Blanchard and DeBlois, equal. *Class II.*—Edwards, Paterson, Fraser (D. C.), McKenzie ; Galbraith and Paterson, equal. *Class III.*—Ogilvie (P.), Reynolds, Wilson (T. M.), Tupper, Flint, Frechette and White (G. V.), equal.

SURVEYING FIELD WORK.

SECOND YEAR.—(*Architectural, Civil and Mining Engineering Courses.*)—*Class I.*—Archer, Patterson, DeBlois, White (G. V.), Gagnon (E. F.) ; Coote and Askwith, equal ; Blue. *Class II.*—Clement, Edwards, Flint, Blanchard ; Frechette and McKenzie, equal ; Ritchie, Palmer, Fraser (D. C.) ; Galbraith and Wells, equal ; Tupper, Wilson (T. A.) *Class III.*—Ogilvie (P.), Burchell.

THEORY OF STRUCTURES.

FOURTH YEAR.—*Class I.*—Colpitts. *Class II.*—Fraser (C. E.) and Gagnon (L. F., equal ; *Class III.*—Gough, Van Horne.

THIRD YEAR.—*Class I.*—Nelson, Allen, Shepherd, Walker, Hamilton, Gillean. *Class II.*—MacMaster and Robertson (P. W. K.), equal ; Buffett and Corriveau and Duncan, equal ; Percy, Montgomery, Moore (E. V.) ; Arkley and Miller (A. K.), equal ; Glassco (J. G.) and Osborne, equal ;

Cowans ; Black and Ewart, equal. *Class III.*—Byers and Neville, equal ; Burgoyne, Buchanan (F. P.), St. George, Sise, Donaldson ; Fraser, (John W.), and Smith (G. B.), equal.

THERMODYNAMICS.

FOURTH YEAR.—*Mechanical Course.—Class I.*—McLean (W. B.), Dargavel, Young. *Class II.*—Wenger, Whyte, (J. S.), Davidson. *Class III.*—Hickey, Ewan ; Gisborne and Yorston, equal ; Austin.

FOURTH YEAR.—*Civil, Electrical and Mining Courses.—Class I.*—Grier. *Class II.*—Archibald, Campbell, Kirkpatrick ; Denis and Waller, equal ; Bowman and Hyde (J. C.), equal ; Stevens, MacInnes, Bachand ; Fraser (J. W.) and Shaw, equal ; Burgess ; Fetherstonhaugh and Yuile, equal. *Class III.*—Moore (W. M.) and Preston, equal ; Blaylock and Morgan, equal ; Colpitts and McLea and Wilson, equal ; Fraser (H.) and Gagnon (L. F.), equal ; Pitcher ; Fraser (C. E.) and Gough, equal ; Van Horne.

THIRD YEAR.—*Class I.*—Shepherd ; Neville and Percy, equal. *Class II.*—Walker, Arkley. *Class III.*—Smith G. B.), Osborne, Macmaster, Hamilton, Millar (J. L.) and Sise, equal.

Students of the University.

SESSION 1898-99.

McGILL COLLEGE.

FACULTY OF LAW.

FIRST YEAR.

Armstrong, A. A.,	Bristol, Q	Mitchell, W. G.,	Danby, Q
Béique, Fred.,	Montreal	Moffat, D. S., B.A. (McG.)	Inverness, Q
Butler, W. H.,	Montreal	Normandin, Z.,	St. Henri, Q
Campbell, G. A., B.A. (McG.)	Montreal	O'Brien, W. H.,	Liverpool, Eng.
Cousineau, Ls., B.L.,	Gatineau Point, Q	Pearson, G. F.,	Truro, N.S.
Curran, Louis E.,	Montreal	Pitau, G.,	Somerset, Q
Demers, Olivier,	Montreal	Place, E. G.,	Millington
Doak, A. E.,	Coaticook, Q	Rowat, D. McK.,	Winchester, O
Holden, A. R., B.A., B.A.Sc. (McG.)	Belleville, O	Skinner, Waldo M.,	St. John, N.B
Leslie, W. C.,	Spry Bay, N.S.	Springle, H. A.,	Montreal
McMaster, A. R.,	Montreal	Thompson, J. R.,	Megantic Co.
McMichael, R. C.,	Windsor Mills, Q	Du Tremblay, P. R.,	Ste Anne de la Pérade, Q
Mann, J. A.,	Montreal	Westover, E. W.,	Sutton, Q
Meagher, J. J.,	Montreal		

SECOND YEAR.

Archibald, Sam. G., B.A (McG.)	Montreal	Macalister, A. W. G.,	Danville, Q
Baker, Geo. H.,	Sweetsburg, Q	Macfarlane, L., B.A,	Montreal
Burke, Edmund A.,	Montreal	Mackay, Hugh,	Montreal
Chauvin, Henry A.,	Montreal	Margolese, Louis,	Montreal
Dobell, Alfred, B.A.,	Quebec	Pearson, G. F.,	Halifax, N.S
Enright, Frederick T.,	Sherbrooke, Q	Redpath, Joscelyn C.,	Montreal
Garneau, Leon,	Ottawa	Sharswood, Wm. F.,	Montreal
Kay, Wm. F,	Montreal	Trihey, Harry,	Montreal
		Walsh, Thos. E., B.A. (Laval),	Montreal

THIRD YEAR.

Baby, H., B.L.,	Montreal	McIver, W. E.,	Melbourne, Q
Ball, W. S.,	East Bolton, Q	Mayrand, O., B.L.,	St. Philippe, Q
Barlow, J. C.,	Montreal	Rinfret, T.,	Montreal
Bercovitch, P.,	Montreal	Robertson, W. G. M., B.A. (Bishop's),	Sherbrooke, Q
Carter, W. F., B.A.Sc. (McG.),	Cowansville, Q	Saunders, F. C.,	Montreal
Décarie J. N. F., B.A., N. D. de Grâce, Q		Semple, G. H., B.A. (Laval),	Montreal
Drolet, E. B., B.A. (Laval),	Montreal	Thomson, A. B.,	Montreal
Ives, Wm. C.,	Macleod, Alberta	Thorneloe, W. G., B.A,	Montreal
Lynch, W. H.,	Mansonville, Q	Vipond, E. E.,	Montreal
McCabe, F. E. P. F.,	Windsor Mills, Q	Whelan, J.,	Montreal

PARTIAL STUDENTS.

Reeve, Sydney N.,	Chicago	Macdougall, J. W.,	Cape Breton
Seath, P. K.,	Montreal		

FACULTY OF MEDICINE.

FIRST YEAR.

Ames, A. C., Donald, B.C.
Anderson, R. J. R., Chaudière Basin, Que
Arnold, D. R., B.A., St. John, N.B
Belisle, J. R., Nashua, N.H
Blair, A. K., Chicoutimi, Que
Blair, H. G. F., Ashton, Ont
Blakeman, F. W., Stratford, Ont
*Boulter, J. H., Demorestville, Ont
Boyd, R. M., Belleville, Ont
Bradshaw, J. E., Montreal, Que
Briggs, J. A., New Westminster, B.C
Buckman, A. R., Brockville, Ont
Bulmer, A. M., Montreal, Que
Burton, H. T., Short Hills, N.J
Byers, J. R., Gananoque, Ont
Campbell, J.A.E., B.A., Westmount, Que
Carnochan, W. L. C., Montreal, Que
Carter, W. Le M., B.A., Quebec, Que
Chamberlain, H. B., Perth, Ont
Christie, J. F., Martintown, Ont
Codrington, R. F., Somerset, Eng
Colby, J. C., B.A., Stanstead, Que
Coleman, C. E., Chatham, N.B
Cullen, W. H., Montreal, Que
†Cumming, W. G., B.A., Montreal, Que
Cunningham, R. B., Montreal, Que
Curren, L. M., Lawson's P.O., Queen's Co., N.B
Delaney, M., House Harbor, Magdalen Is
*Dempsey, W. B. Calabogie, Ont
*DesAulniers, P., Ottawa, Ont
Dickson, W. H., Pembroke, Ont
*Donnelly, W. H., Montreal, Que
Donohue, J. J. B.A., Worcester, Mass
Dorion, W. A., Montreal, Que
Douglas, F. C., Montreal, Que
Doyle, A. J., B.A., Jacquet River, N.B
Eastman, E. B., Portsmouth, N.H
Eaton, F. C., Hancock, N.H
*Elder, R., Huntingdon, Que
*Ellison, R. B. L., Bear River, N.S
Evans, S., Ramsay's Corners, Ont
Ferguson, W. H., St. Thomas, Ont
Folkins, C. G., Millstream, N.B
Folkins, H. G., Millstream, N.B
Ford, W. S., Belleville, Ont
Forster, J. F. C., Dorchester, N.B
Gardiner, R. J., Smith's Falls, Ont
Gardner, W. A., B.A., Huntingdon, Que
Giles, G. N., Madeira, Cal
Gilmour, C. R., Brockville, Ont
Green, F. W., Pictou, N.S
Gurd, R. D., Sarnia, Ont
Halliday, J. L., Sawyerville, Que
Harris, L. C., Moncton, N.B
Hart, F. W., B.A., Sackville, N.B
Hawker, J. E., St. John, N.B
Henry, C. M., Palmer S. Dakota
Hollingsworth, J.E., Meckling, S. Dakota
Hopkins, C. W., Aroostook, Junct., N.B
*Horsfall, F. L., Montreal, Que
Hughes, H. J., Charlottetown P.E.I
Husband, B. K., Hamilton, Ont
†Hutchinson, J. W., Montreal, Que
Irwin, F., Shelbourne, N.S
Johnson, J. A., B.A., Montreal, Que
Jones, N. C., Gananoque, Ont
King, R., B.A., Sackville, N.B
Latreille, E., B.L., Montreal, Que
Leney, J. M., B.A., Montreal, Que
Macdonald, A. A., B.A., St. Andrews, P.E.I
Mackinnon, G. E. L., Alexandria, Ont.
Maclaren, A.H., B.A., Huntingdon, Que
MacMillan, T. F., Montreal, Que
MacNaughton, J. A., Salisbury, N.B
MacNeill, A. J., Stanley Bridge, P.E.I
*McDonald, P. A., Dundee Centre, Que
McEachern, I. W. T., Rockland, Ont
*McEwen, J. R., Dewittsville, Que
McGibbon, D., Arkona, Ont
McGrath, R. H., Dorchester, N.B
McKee, W. E., Coaticooke, Que
McNamara, W. J., Edmonton, Alta
McNeill, J. F., Kensington, P.E.I
*McPherson, T. Stratford, Ont
Maillet, H. A., Bute City, Montana
Manchester, J. W., Sussex, N.B
Martin, H. E., Chatham, Ont
Mason, F. C., Plattsburg, N.Y.
Mason, L. D., B.A., Montreal, Que
Menzies, J. E., New Bedford, Mass
*Mitchell, I. E., Sherbrooke, Que
Moffatt, G., Inkerman, Ont
Moore, P. T., B.A., Montreal, Que
Morin, E. J., Springfield, Mass
Morrison, J. F., Copleston, Ont
Morse, W. R., B.A., Laurencetown, N.S
Mothersill, G. S., Ottawa, Ont
Munro, A. J., Montreal, Que
*Murphy, H. H., Antrim, Ont
Neary, A. G., Dorchester, Mass
Ness, W., Howick, Que
Netten, P. E., Port de Grave, Nfld
Oliver, C. J., Mansonville, Que
Palmer, G. H., Dorchester, N.B
Paterson, R. C., B.A., Montreal, Que
Pavey, H. L., London, Ont
Peters, O. R., Gagetown, N.B
Pickard, L. N., Charlottetown, P.E.I.
Pilot, F. W. H., St. Johns, Nfld
Pratt, C. M., St. John, N.B
*Price, J., Campbellton, N.B
Ramsay, W. A., Westmount, Que
Rawlings, W. T., Montreal, Que
Robertson, J. J., Belleville, Ont
Ross, T. M., Lancaster, Ont
Scott, W., Montreal, Que
Shaw, De B., Portland, Me
Ship, M. L., B.A., Montreal, Que
Simpson, C. J. Southbridge, Mass
Simpson, J. C., Montreal, Que
Smith, T. W. Hawkesbury, Ont
Stockwell, H. K., Danville, Que
Stowell, F. E., Worcester, Mass
Strong, N. W., Cambria, Ont
Theriault, J., Edmundston, N.B
*Thomas, J. W., B.A., Montreal, Que
Tolmie, J. A., Moose Creek, Ont
Townsley, R. H., Montreal, Que
VanWart, R. M., B.A., Fredericton, N.B
Warren, J. G., Montreal, Que
*White, G. D., Trenton, Ont
Williams, R. G., Woodford, Ont
Wood, W., Westmount, Que
Wright, W. W., White's Cove, N.B

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* Double Course.
† Partial.

SECOND YEAR.

Alexander, J. H., Westmount, Que
Anton, D. L. S., Ireland
Bayfield, T. F., Charlottetown, P.E.I
Beatty, H. W., Sarnia, Ont
Belanger, E. R., Ottawa, Ont
Bell, A. J., Westmount, Que
†Bishop, L. C., Marbleton, Que
Blake, J. J., Charlottetown, P.E.I
Blaquiere J., North Rustico, P.E.I
Boire, W., E.' Manchester, N.H
Borden, H. L.' B.A., Canning, N.S
Browne, J G., B.A., Montreal, Que
Bruce, J., B.A., Moncton, N.B
Burrows, A. E., Kingston, Ont
Butler, P. E., B.A., Milltown, N.B.
Callbeck, A. Des B., Tryon, P.E.I
Campbell, A., Souris, P.E.I
Campbell, R. P., B.A., Westmount, Que
Cantlie, F. P. L., Montreal, Que
Carey, E. E., B.A., Rozel Guernsey, Eng
†Carlyle, D. A., Morewood, Ont
Chandler, E. C., Montreal, Que
Collison, H. McN., Dixon's Corners, Ont
Collison, J., Dixon's Corners, Ont
Crang, F. W., Toronto, Ont
Currie, W. D., B.A., Halifax, N.S
Dalton, C. H., Tignish, P.E.I
*Dixon, J. D., Montreal, Que
*Dixon, W. E., Montreal, Que
Donovan, J. B., Lewiston, Maine
†Dowson, C. K., Montreal, Que
Duncan, J. W., Montreal, Que
Egan, W. J., Sydney Mines, N.S
Ellis, R. L., Youghall, N.B.
Fairie, J. A., Montreal, Que
†Fearn, C. J., St. Johns, Nfld
Featherston, H. C., Hamilton, Ont
*Fleming, J. E., North Rustico, P.E.I
Fuller, A. T., B.A., Truro, N.S
Fuller, H. T., Halifax, N.S
*Gardner, R. L., Almonte, Ont
George, J. D., Redwood, N.Y
*Goodall, J. R., Ottawa, Ont
†Grant, W. W., Montreal, Que
Harley, R. O., Dublin, Ireland
Hope, J. T., Glen Robertson, Ont
Howard, A. C. P., B.A., Montreal, Que
Hunter, E. N., McL., Mirrimac, Mass
Jackson, C. F., Brockville, Ont
*Johnston, R. De L., Montreal, Que
Johnston, J. L., Martintown, Ont
Jones, J. H., Brockville, Ont
Keenan, F. T. J., Lindsay, Ont
Kendall, A. L., Vancouver, B.C
Ker, R. H., B.A., Montreal, Que
Lawlor, F. E., Dartmouth, N.S
*Learmonth, G. E., Montreal, Que
Leggett, T. H., Ottawa, Ont
Lester, C. W., South Durham, Que
Lidstone, A. E., Richmond, W., Ont
Little, H. M., B.A., London, Ont
Lomas, A. J., Montreal, Que
Lunney, T. H., St. John, N.B
Lynch, J. B., Fredericton, N.B
MacCarthy, F. H., Ottawa, Ont
Mackay, M., B.A., Montreal, Que
Mackenzie, S. D., Sarnia, Ont
Macneill, J. W., West River, P.E.I
MacAleer, E. F., Bedford, Que
McDonald, C. A., Milltown, N.B
McDonald, E. E., Fort Qu'appelle, N. W.T
McKay, D. S., Reserve Mines, N.S
Martin, E. A., Kemptville, Ont
Meighen, W. A., Perth, Ont
Millar, S., South Durham, Que
Miller, G. H.S., Alexandria, Ont
Moore, R. G., Belleville, Ont
Moore, J. C., D.V.S., St. Chrysostome, Que
Morgan, A. D., Nanaimo, B.C
Moses, H C., Caledonia, Ont
Mullally, E. J., Souris, P.E.I
†Munroe, A. T., Moose Creek, Ont
Newcombe, W. E., Vancouver, B.C
Niven, J. K., London, Ont
O'Reilly, E. P., B.A., Hamilton, Ont
Paradis, J. E., Montreal, Que
Penner, E., B.A., Gretna, Man
Pittis W., Plainfield, N.J
Redon, L. H., B.A., Victoria, B.C.
Richards, B.A., Yarmouth, N.S
*Ritchie, C. F., Montreal, Que
Roberts, F. A., Waterboro', Me
Roberts, J., Woodburn, Ont
Robertson, C. G., Hawkesbury, Ont
Robertson, L. F., Stratford, Ont
Robertson, R. D., St John, N.B
Robertson, W. G., Montreal, Que
Robidoux, E. L., B.A., Shediac, N.B
Rogers, H. B., Peterborough, Ont
Russel, C. K., B A., Montreal, Que
Russell, E.M., B.A., Springfield, Mass
Rutherford, C. A., Waddington, N.H
Ryan, W. T., B.A., Fredericton, N.B.
Sanders, C. W., Kemptville, Ont
Saunders, W. E., Woodstock, N B
Shearer, C., Westmount, Que
Shearer, R. L., Kelso, Que
Simpson, E. G. W., B.A., Lennoxville, Que
Simpson, S., Bayview, P.E.I
Snetsinger, H. W., Moulinette, Ont
Stentaford, G. L., Heart's Content, Nfld
Stevenson, J., B.A., Montreal, Que
†Stewart, C. J., Russel, Ont
†Taylor, D. A., Havelock, N.B
Taylor, W. L., Waterloo, Que
Tobin, A. J., Cornwall, Ont
*Walker, H., New York City, N.Y
Ward J. A., Lewiston, Maine
Wiggin, W. I., Lowell, Mass
*White, E. H., Montreal, Que
Wiley, B. E., Fredericton, N.B
Williams, F T., Boston, Mass
Williams, W., Remsen, N.Y
†Wilson, J. J., Montreal, Que
Winter, D. E., Montreal, Que
Wyman, H. B., B.A., Chute à Blondeau, Ont

THIRD YEAR.

Armstrong, J. W., B.A., Bristol, Que
Baird, J. A., Brucefield, Ont
Ballantyne, C. T., Ottawa, East, Ont
Bishop, T. E., Harvey Bank, N.B
Brown, E. L., Chesterville, Ont
Buffett, C., B.A., Grand Bank, Nfld

* Double Course.
† Partial.

Burnett, P., Montreal, Que
Campbell, O. E., Apohaqui, N.B.
Carnwath, J. E. M., Riverside, N.B
Cartwright, C., Kingston, Ont
Charlton, G. A., Montreal, Que
Chisholm, J., New Glasgow, N.S
Clemesha, W. F., Port Hope, Ont
Coates, H. W., Bass River, N.B
Coffin, J. D., Charlottetown, P.E.I
Cook, C. R., Montreal, Que
Coristine, W. H., Montreal, Que
Costello, A. E., Montreal, Que
Cowperthwaite, W. M., Carboneer, Nfld
Cox, J. R., Hull, Que
Crozier, J. A., B.A., Grand Valley, Ont
Donaldson, A. S., Brockville, Ont
Donnelly, A. J., B.A., Sturgeon, P.E.I
Doull, A. E., Montreal, Que
Duffy, P. F., Charlottetown, P.E.I
Eagar, W. H., Dartmouth, N.S
Freeman, C. H., B.A., Milton, N.S
Galbraith, H. H., Westmount, Que
Gibson, E. J., Campbellford, Ont
Gilday, A. L. C., B.A., Montreal, Que
Gray, H. R. D., B.A., Montreal, Que
Hall, A. R., Washington, Ont
Harvie, S. K., B.A., Newport, N.S
Haszard, C. F. L., Charlottetown, P.E.I
Henry, C. K. P., Ottawa, Ont
Hiebert, G., Gretna, Man
Hill, W. H. P., Montreal, Que
Hughes, R. E., Ottawa, Ont
Igoe, O. A., Tarrytown, N.Y
Jardine, J., Freetown, P.E.I
Johnston, A., Leeds, Que
Jones, H. A., B.A., Moncton, N.B
Kannary, E. LeR., B.A., Northfield, Minn
Keating, B. H., Moore, Ont
Keating, H. T., Moore, Ont
Littig, J. V., Davenport, Iowa
MacKinnon, I. W., Charlottetown, P.E.I
MacPherson, C., St. John's, Nfld
McAuley, A. G., Ventnor, Ont
McConnell, R. E., B.A., Montreal, Que
McDiarmid, W. B., Maxville, Ont
McDonald, W. F., Westville, N.S
McKee, S. H., B.A., Fredericton, N.B
McSorley, H. S., Enderby, B.C
Martin, J. J., North Bay, Ont
Martin, L. W., Warden, Que
May, L. W., Ottawa, Ont
Morris, T. E.
Morrison, A. S., Montreal, Que
Morrison, G. D., Vankleek Hill, Ont
Morrow, J. J., Fergus, Ont
Murray, L. M., Truro, N.S
O'Sullivan, M. T., Little Glace Bay, C.B
Paintin, A. C., Mansonville, Que
Paterson, A., B.A., Montreal, Que
Paterson, W. F., B.A., Montreal, Que
Pattee, F. J., Vankleek Hill, Ont
Patton, J. W. T., Ponds, N.S
Payne, R. H., Kingston, Jamaica, W.I.I
Pope, E. L., B.A., Belleville, Ont
Porter, A. S., Powassan, Ont
Reynolds, F. L., St. John, N.B
Richard, F. A., B.A., Richibucto, N.B
Robb, G. W. A., Oxford, N.S
Ross, H., B.A., Montreal, Que
Rowley, W. E., B.A., Marysville, N.B
Rutherfurd, A. E., London, Eng
Sayre, T. D., Amherst, N.S
Scriver, E. F., Hamilton, Ont
Secord, E. R., Brantford, Ont
Shaughnessy, C. R., St. Stephen, N.B
Snyder, A. E. W., Coaticooke, Que
Sparrow, C. J., Alexandria, Ont
Stevenson, R. H., Danville, Que
Stewart, C. A., Donvegan, Ont
Symmes, C. R., Aylmer, Que
Tanner, C. A. H., Windsor Mills, Que
Todd, J. L., B.A., Victoria, B.C
Townshend, C., Parrsboro', N.S
Turnbull, J. A., Bear River, N.S
Turner, W. G., B.A., Quebec, Que
Wilkins, F. F., Montreal, Que
Wilmot, LeB. B., Oromocto, N.B
Wilson, W. A., Carleton Place, Ont

FOURTH YEAR.

Akerley, A. W. K., Fredericton, N B.
Alley, G. T., Charlottetown, P.E.I.
Aylmer, A. L., Melbourne.
Beadie, W. D., Lachine Locks, Que.
Bowles, C. T., Ottawa, Ont.
Bradley, J. H., Charlottetown, P.E.I.
Brannen, J. P., Montreal, Que.
Brennan, F. A., St. Albans, Vt.
Brown, W. F., B.A., Plattsburg, N.Y.
Browning, W. E., Exeter, Ont.
Burnett, W. B., B.A., Sussex, Ont.
Burris, J. S., Halifax, N.S
Cameron, L. G., Cascades, Que.
Casselman, P. C., Morrisburg, Ont.
Conroy, R. J., Peterborough, Ont.
Craig, J. E., North Gower, Ont.
Cumming W. A., Buckingham, Que.
Cunningham, A. A., Huntingdon, Que.
Cuzner, G., Ottawa, Ont.
Darche, C. E., Danville, Que.
Drier, N. E., Woodstock, N.B.
Dyer, E. O., B.A., Sutton, Que.
Fawcett, R. F. M., Jamaica, W.I.I.
FitzGerald, C. T., Harbor Breton, Nfld.
Fourney, F. W., B.A., Montreal, Que.
Francis, B., Sydney Mines, N.S.
Fuller, G. F. Le R., Sweetsburg, Que.
Galbraith, W. S., Lethbridge, Alta.
Gillis, E. G., Indian River, P.E.I.
Gordon, A. H., St. John, N.B.
Gray, C. F. A., Montreal, Que.
Greene, E., Leitrim, Ont.
Higgins, C. P., Victoria, B. C.
Jackson, F. S., Westmount, Que.
Jones, F. B., Montreal, Que.
Jones, D. C., Maitland, Ont.
Law, R., Ottawa, Ont.
Levy, A., B.A., Montreal, Que.
Lineham, D. M., Calgary, N.W.T.
Loeb, A. A., Montreal, Que.
Logie, A. E., Chatham, N.B.
Love, R. H., Carleton Place, Ont.
Macdonald, J. S., Montreal, Que.
Mackenzie, C. A., Toronto, Ont.
McCombe, J., Dublin, Ireland.
McDougall, A., Kippen, Ont.
McIntyre, J. D., Clifton, P.E.I.
McKay, J. G., Morewood, Ont.
McKechnie, W. C., Marquette, Man.
McNally, D. A., Abram's Village, P.E.I.
McNaughton, F. M. A., B.A., Huntingdon, Que.
McNiece, T. G., Carsonby, Ont.
Mellon, P. B., Ottawa, Ont.
Morris, T. E., St. John, N.B.
Moss, J. N., Montreal, Que.

Mousseau, E. A., Hull, Que.
Murphy, E. F., St. John, N.B.
Mussen, A. T., Lachine, Que.
Nash, A. C., Ogdensburg, N. Y.
Nicholson, F. J., B.A., Victoria, B.C
O'Brien, J. R., B.A., Ottawa, Ont.
Peake, E. P., B.A., Oshkosh, Wis.
Peppers, H. W., B.A., Fredericton, N.B.
Phelps, S. E., Plainfield, N.J.
Pittis, H., Plainfield, N.J.
Prodrick, W. S., Ottawa, Ont.
Rajotte, E. C. F., Montreal, Que.
Ross, S. A., Hintonburg, Ont.
Ross, W. J., Martintown, Ont.
Rutherford, R. M., Hawkesbury, Ont.
Ryan, G. H. W., Montreal, Que.
Scott, J. F., Montreal Annex, Que.
Shore, R. A. A., B.A., Toronto, Ont.
Sutherland, W. H., Sea View, P.E.I.
Thompson, G. H., North Sydney, N.S.
Tooke, F. T., B.A., Montreal, Que.
Trites, C. B., Petitcodiac, N.B.
Turnbull, T., Stratford, Ont.
Whillans, H. A., Nepean, Ont.
Wilkins, W. A., Montreal, Que.
Witherbee, W. D., Potsdam, N.Y.
Wood, D. F., Faribault, Minn,
Woodley, J. W., Rockland, Ont.

FACULTY OF ARTS.

Undergraduates.

FIRST YEAR.

Name.	*School.*	*Residence.*
Adams, Chauncey A.,	Stanstead Wesleyan Coll.,	Coaticook, Q
Ascah, Robt. G.,	M. Dioc. Theol. College,	Peninsula, Gaspé, Q
Astle, Thos. F.,	Albert College, Belleville, O.,	Little Metis, Q
Blagrave, Robt. C.,	M. Dioc. Theo. College,	Rawdon, Q
Carlyle, Ernest J.,	Woolstock Coll. Institute,	Woodstock, O
Carson, Hermon A.,	Danville Academy,	Nicolet Falls, Q
Cole, Geo. E.,	Institute Feller,	Westmount, Montreal
Crothers, Harold R.,	St. Francis Coll. School,	Venice, Q
Crowell, Sam. G.,	Yarmouth Academy, N.S.,	Yarmouth, N.S
Doucet, Réné P.,	St. Mary's College,	Montreal
Eaton, Courtland,	Westmount Academy,	Westmount, Montreal
Ellison, Reginald B. L.,	Rothesay Church Sc. for Boys,	Bear River, N.S
Fox, Frank H.,	Private Tuition,	Montreal
Harris, Spencer L. D.,	Private Tuition,	Ottawa, O
Jack, Milton,	Montreal Coll. Institute,	Chateauguay Basin, Q
McDonald, Jno. A.,	Huntingdon Academy,	Valleyfield, Q
Muir, Kenneth C.,	Huntingdon Academy,	Huntingdon, Q
Munn, W. Clement,	Quebec High School,	Quebec
Murphy, Herbert H.,	Almonte High School,	Antrim, O
Ogilvie, Guy,	Abingdon School,	Montreal
Price, Joe,	Private Tuition,	Campbelltown, N.B
Pruyn, Wm. G.,	Napanee Coll. Institute,	Napanee, O
Schrag, Astor R.,	Brantford Coll. Institute,	Brantford, O
Troop, G. Wm.,	M. Dioc. Theol. College,	Montreal
White, George D.,	Jameson Ave. Coll. Institute,	Toronto, O
Wilson, Thomas J.,	M. Dioc. Theol. College,	Shawville, Q

SECOND YEAR.

Anderson, Richard S.,	Albert College,	Kenlis, Assa
Barrington, Fred. H.,	Waterloo Academy,	Waterloo, Q
Boulter, J. Henry,	Picton High School,	Demorestville, O
Brodie, Hugh H.,	McGill College,	St. Henry, Montreal
Brown, Albert V.,	Montreal High School,	Montreal
Brown, Edwin O.,	Prince of Wales College, P.E.I.,	Little York, P.E.I.
Carruthers, Chris.,	Montreal Dioc. Theol. College,	Aylwin, Q
Charters, Herbert,	Montreal High School,	Montreal
Chipman, Warwick F.,	Abingdon School, Montreal,	Montreal
Cole, G. Percy,	Montreal High School,	Montreal

Name.	*School.*	*Residence.*
Copeman, Joseph Hodge,	Quebec High School,	Quebec
Cotton, Wm. U.,	Feller Institute, Grande Ligne, Q.,	Sweetsburg, Q
Davies, Nelson C.,	McGill Normal School,	Bedford, Q
Dickson, Norval,	Huntingdon Academy,	Allan's Corners
Fuller, George D.,	St. Francis College,	Adamsville, Q
Harper, Robert J.,	Montreal High School,	Montreal
Hickson, Robert N.,	Abingdon School, Montreal,	Montreal
Ireland, A. Austin,	M. Dioc. Theol. Coll.,	Montreal
Ireland F. Charles,	Montreal Coll. Institute,	Westmount, Montreal
Irving, George,	Prince of Wales Coll., P.E.I.,	Vernon Bridge, P.E.I.
Lindsay, J. Edwin,	Montreal Dioc. Theol. Coll.,	Rawdon, Q
Lochead, Arthur W.,	Kemptville High School,	North Gower, O
McCormick, Alex. S.,	Abingdon School,	Westmount, Montreal
McDonald, John,	Montreal High School,	Montreal
McEwen, John R.,	Huntingdon Academy,	Dewittville, Q
McLeod, Angus B.,	Prince of Wales Coll., P.E.I.,	Springton, P.E.I
McMurtry, Gordon O.,	Montreal High School,	Montreal
McMurtry, Shirley O.,	Montreal High School,	Montreal
McNaughton Wm. G.,	Huntingdon Academy,	Huntingdon, Q
McPherson, Thomas,	Collegiate Institute, Stratford,	Stratford, O
Mitchell, Isaiah Edward,	Private Tuition,	Sherbrooke, Q
Moffatt, Charles F.,	Montreal High School,	Montreal
Molson, Percival,	Montreal High School,	Montreal
Mount, Hector P.,	Montreal Dioc. Theol. College,	Montreal
Mowatt, Joseph A.,	Montreal High School,	Montreal
Parker, Dan. T.,	Lachute Academy,	Cambria, Q
Ross, Jno. M.,	University Coll., Toronto,	Embro, O
Scott, Wm. J.,	Montreal High School,	Montreal
Scrimger, Francis A. C.,	Montreal High School	Montreal
Stephens, Laurence,	Clifton College, Eng.,	Montreal
Sterns, H. Edgar,	Prince of Wales Coll., P.E.I.,	Charlottetown, P.E.I.
Strong, Norman W.,	Waterloo Academy,	Cambria, Q
Tees, Fred. J.,	Montreal High School,	Montreal
Viner, Norman,	Montreal High School,	Montreal
White, D. Roderick,	Huntingdon Academy,	Huntingdon, Q
Williams, Hy. S.,	Montreal High School,	Knowlton, Q

THIRD YEAR.

Name.	*Residence.*
Ainley, Laurence,	Almonte, O
Cochrane, Donald,	Montreal
Cohen, Abraham,	Montreal
Cooke, H. Lester,	Montreal
Crack, Isaac E.,	Kingsbury, Q
Crowell, Bowman C.,	Yarmouth, N.S
DeWitt, Jacob,	Montreal
Dixon, James D,	Montreal
Elder, Robert,	Trout River, Q
Ells, Sydney C,	Ottawa, O
Ferguson, Colin C.,	Marshfield, P.E.I
Forbes, Wilfrid,	Vernon River Bridge, P.E.I
Grier, Geo. W.,	Montreal
Hardy, Chas. A.,	Fortune Cove, P.E.I
Horsfall, Frank L.,	Montreal
Jeakins, Chas E.,	Huntingdon, Q
Johnson, J. Guy W.,	Montreal
Lee, Hy. S.,	Kamloops, B.C

Name.	*Residence.*
Luttrell, Hy P.,	Montreal
Mackinnon, Cecil G.,	Cowansville, Q
Macmillan, Cyrus J.,	Charlott'n, P.E.I
Mitchell, Sydney,	Montreal
Newson, Wm. V.,	Charlottetown, P.E.I
Nutter, J. Appleton,	Montreal
Radford, E. Alan,	Montreal
Reford, Lewis,	Montreal
Ritchie, Charles F.,	Montreal
Rowat, T. Alex.,	Athelstan, Q
Rowell, Arthur H.,	Montreal
Scott, George W.,	Montreal
Scott, Harry E.,	Napanee, O
Stewart, Donald,	Dunbar, O
Walker, Horatio,	L'Ile d'Orléans, Q
Weinfield, Henry,	Montreal
Willis, Samuel J.,	Kingston, P.E.I
Woodley, Edward C.,	Montreal

FOURTH YEAR.

Name.	*Residence.*	*Name.*	*Residence.*
Brown, Walter G.,	Athelstan, Q	Larmonth, Geo. E.,	Montreal
Bruce, Guy O. T.,	Huntingdon, Q	Laurie, Ernest,	Montreal
Cotton, Chas. M.,	Sweetsburg Q	Lundie, John Alex.,	Montreal
Cumming, W. Gordon,	Montreal	McClung, Robert K.,	Kingsbury, Q
Dixon, Wm. E.,	Montreal	McDonald, Paul A.,	St. Agnes de Dundee
Duguid, Robert Colin,	Montreal	MacKay, Hector,	Ripley, O
Ells, Hugh,	Ottawa	McKenzie, Bertram S.,	London, O
Gardner, R. Lorne,	Brockville, O	McLeod, John B.,	Springton, P.E.I
Goodall, James R.,	Ottawa	Munroe, Thos. A.,	Montreal
Hardisty, Rich. H. M.,	Montreal	Patch, Frank S.,	Montreal
Heeney, Wm. Bertal,	Danford Lake, Q	Rice, Horace G.,	New Durham, O
Henderson, Ernest H.,	Franklin Centre	Robertson, Lemuel,	Marshfield, P.E.I
Holland, Thos. B.,	London, Eng.	Thompson, James E.,	Coaticook, Q
Johnson, R. De Lancey,	Montreal	Wainwright, Arnold,	Montreal
Johnston, Wallace,	Redsgrave, O	White, E. Hamilton,	Montreal
Keith, Henry J.,	Smith's Falls, O		

Partial Students.

A Student who is not an Undergraduate, or Graduate, is called a Partial Student.

The figure (1), (2) or (3), prefixed to a name, indicates that the Student takes a class in the corresponding year as well as in that where the name is found.

FIRST YEAR.

Name.	*Residence.*	*Name.*	*Residence.*
Andrews, John J.,	St. Lamberts	Laughlin, Wm. A.,	Toronto, O
Blackader, Gordon H.,	Montreal	MacCallum, J. D. G.,	Montreal
Boright, S. H.,	Sutton, Brome Co., Q	McDougall, Erroll W.,	Montreal
Bradford, Wm. G.,	Montreal	Millar, Wm.,	Pembroke, O
Brandt, Ed. E.,		Morrow, John D.,	Toronto, O
Browne, H. Dalzell,	Montreal	Mosgrove, E. J. W.,	Mosgrove, O
Condé, Geo. D.,	Lancaster, O	Plant, Verner L.,	Montreal
Coone, A. W.,	Manilla, O	Robertson, Harry D.,	Almonte, O
Coulin, J. Ed.,	Montreal	Shallow, T. Jack,	Montreal
Curran, David,	Kirkdale, Q	Tanner, Ag. H.	Joliette, Q
Dempsey, W. B.,	Calabogie, O	Thomson, Jas. A.,	Hamilton, O
DesAulniers, Paul,	Ottawa, O	Thomson, Leslie C.,	Montreal
Donnelly, W. Hy.,	St. Henri, Montreal	Walker, John I.,	Toronto, O
Green, R. J.,	Springford, O	Wotherspoon, Hugh,	Montreal

SECOND YEAR.

Ashton, W. J.,	Gorrie, O	Lloyd, A. E.,	Thamesville, O
Bailey, Thos. W.,	Pakenham, O	McLeod, N. V.,	Granby, Q
Barker, Arthur,	London, O	Mathieson, Peter,	Foresters Falls, O
(1) Bradford, Wm. G.		Ogilvie, Lorne C.,	Montreal
Clarke, Wm. H.,	Halloway, O	Oulton, Geo J.,	Moncton, N.B
(1) Coone, A. W.		Philps, T.,	Melbourne, O
Edwards, John A.,	Liverpool, Eng	Reeve, Sidney N.,	Montreal
(1) Green, R. J.		Sawyer, Thos. E.,	Woodham, O
Greenaway, R. B.,	Hamilton, O	Staple, L. K.	
Greig, J. G.,	Westmount, Montreal	Sutcliffe, J. T.,	Camlachie, O
Hamilton, W. A.,	Carleton Place, O	Swinton James,	Rockton, O
Kaine, Chris. C.,	Gorrie, O	Turkington, Ed.,	Maribank, O
Lapointe, Clé.,	Montreal	Vickery, T. J.,	Smith's Falls, O

THIRD YEAR.

Name.	*Residence.*	*Name.*	*Residence.*
(2) Ashton, W. J.		Miller, John H.,	Cashel, O
(2) Bailey, Thos. W.		Millson, Walter E.,	Glanworth, O
(2) Barker, Arthur		Munroe, Wm.,	Woodstock, O
(2) Clarke, Wm. H.		(2) Oulton, Geo. J.	
(2) Coone, A. W.		Powell T.,	Almonte, O
Crabb, Geo. J.,	Pembroke, O	Sands, H. Hayden	
(2) Green, R. J.		(2) Sawyer, Thos. E.	
(2) Hamilton, W. A.		Secord, Albert,	New Durham, O
Hicks, R.,	Exeter, O	(2) Sutcliffe, J. T.	
(2) Lloyd, A. E.		Taylor, Alf. M.,	Montreal
MacInnes, Finlay,		Tippet, Ernest H.,	North Bay, O
S. Kinloss,	Lucknow, O	(2) Vickery, T. J.	
Masson, W. D.,	St. Catharines, O	Wiggins, M. E.,	Malakoff, O

FOURTH YEAR.

Angell, E. E.,	Mooers, N.Y	(3) Oulton, Geo. J.	
(2) Greig, John G.		Runnells, Arthur E.,	Egypt, Q
(3) Hicks, R.		(3) Sands, Hy. Hayden	
(2) Kaine, Chris. C.		(3) Secord, Albert	
(3) MacInnes, Finlay,		Smith, G. E.,	Stoney Creek, O
(3) Munroe, Wm.			

B. A.

Grace, Arch. H.,	Montreal	Meyer, Jno. B.,	Montreal
Hutchison, David,	Brechin, O	Robertson, Jno. C.	Kings Co., N.B

DONALDA DEPARTMENT.

SPECIAL COURSE FOR WOMEN.

Undergraduates.

FIRST YEAR.

Name.	*School.*	*Residence.*
Baillie, Muriel L.,	Westmount Academy,	Westmount, Montreal
Ellison, Ada A.,	McGill Normal School,	Cowansville, Q
Greenleese, Mary S.,	Misses Symmers & Smith's School,	Montreal
Hitchcock, Caroline L.,	Brockville Coll. Inst.,	Brockville, O
Irving, Elizabeth,	Prince of Wales Coll., P.E.I.,	Vernon River Bridge, P.E.I
Kingsley, Alice M.,	Victoria H. S., St. John, N.B.,	& Montreal H.S., Montreal
McLachlan, Jessie W.,	Guelph Coll. Inst.,	Guelph, O
McLeod, May A.,	Westmount Academy,	Westmount, Montreal
Nolan, Annie W.,	Westmount Academy,	Westmount, Montreal
Smith, Miriam G.,	Morrisburg Coll. Inst.,	Morrisburg, O
Warriner, J. Eva,	M. G. H. S. & Private Tuition,	Montreal
Wright, Elizabeth A.,	M. G. H. S. & Private Tuition,	Montreal

SECOND YEAR.

Name.	*School.*	*Residence.*
Bennett, C. Winifred,	Montreal G. H. S ,	Montreal
Bickerdike, May C.,	Montreal G. H. S.,	Lachine, Q
Budden, Jessie M.,	Montreal G. H. S.,	Montreal
Budden, Ellen M.,	Montreal G. H. S.,	Montreal
Day, Daisy W.,	Montreal G. H. S.,	Montreal Annex
Huxtable, Gertrude M.,	Perth Coll. Inst.,	Montreal
Moison, Evelyn,	Montreal G. H. S.,	Montreal
Page, Harriet A.,	Stanstead Wesleyan Coll.,	North Troy, Vt
Radford, Isabel,	Misses Symmers' & Smith's School,	Montreal
Willis, Elizabeth I.,	Dunham Ladies Coll.,	Westmount, Montreal

THIRD YEAR

Name.	*Residence.*	*Name.*	*Residence*
Brooks, Elizabeth A ,	Montreal	McGregor, Claire R.,	Victoria, B.C
Dey, Mary Helena,	Simcoe, O	Marcuse, Bella,	Westmount, Montreal
Garlick, Edythe A.,	Montreal	Perley, Frances B.,	Upper Maugerville, Sunbury Co., N.B
Holman, Caroline E.,	Summerside, P.E I.	Rorke, Helen,	St. Thomas, O
Jackson, E. Gertrude,	Montreal	Smith, Lillian A.,	Morrisburg, O
Lundie, Jessie F.,	Montreal		

FOURTH YEAR.

Armstrong, Catherine,	Bristol, Q	McDougall, Louise,	Montreal
Brodie, Margt.,	Montreal	McGill, I. Winifred,	Ottawa, O
Finley, Kathleen E.,	Montreal	Potter, Lucy E.,	Montreal
Holiday, Annie,	Rawdon, Q	Radford, Janet I.,	Montreal
Hurst, Isabel M.,	Montreal	Reid, Lena McK.,	Montreal
Johnson, Helena,	Montreal	Reynolds, Elizabeth E.M.,	Winchester, O
King, Christina C.,	Sarnia	Scrimger, Anna M.,	Montreal

Partial Students.

FIRST YEAR.

Blackwell, Alice M. L.,	Montreal	Hyde, Elsie, J.	Montreal
Campbell, M. Roslyn,	Montreal	Lamb, Mary L.,	St. Andrews' East, Q
Dansken, Christina R.,	Glasgow, Scotland	Lewis, Stephanie,	Montreal
		Lightbound, Gertrude,	Montreal
Dixon, Jennie D.,	Montreal	Mariotti, Isabel,	Montreal
Evans, Beatrice L.,	Montreal	Peverley Evalyn I.,	Montreal
Fortier, Georgina H.,	Montreal	Peverley, Hazel,	Montreal
Gould, Emily DeW.,	Montreal	Prowse, Florence,	Montreal
Gurd, Muriel M ,	Montreal	Rainey, S. Frances,	Ottawa, O
Harrington, Clare M.,	Montreal	Sutherland, Alice D.,	Montreal

SECOND YEAR.

Armstrong, Mabel C.,	Montreal	Girdwood, Dora E.,	Montreal
Clogg, Vivian E.,	Montreal	Plimsoll, M. M. Gladys,	Montreal
Edwards, Alice M.,	Montreal	(1) Prowse, Florence.	
(1) Evans, Beatrice L.,			

THIRD YEAR.

Hickson, A. Beatrice,	Montreal	Richardson, Mabel H.,	Montreal
(1) Lamb, Mary L.,		Thomas, M. Wolferstan,	Montreal
Meighen, Maggie F. S.,	Montreal		

FOURTH YEAR.

Name.	*Residence.*	*Name.*	*Residence.*
(3) Hickson, A. Beatrice. Hickson, C. Mabel.,	Montreal	Mackenzie, Evelyn, Morris, Annie M.,	Montreal Montreal

B. A.

Carr, Muriel B.,	St. John, N.B	Lyman, Kath. T.,	Montreal
Dover, M. Violette,	Peterboro, Ont	Pearson, Katie C.,	Montreal
Hammond, Elizabeth A.,	Montreal	Pitcher, Ethelwyn R.,	Iroquois, O
Jordan, Florence,	Montreal	Tatley, Eleanor,	Montreal

FACULTY OF APPLIED SCIENCE.

FIRST YEAR.

Addie, Thomas H.,	Sherbrooke, Q	*Larin, Raoul,	Montreal
Baird, Alexander,	Sherbrooke, Q	Lawrence, Hugh R.,	St. George, N.B
*Barclay, Malcolm D.,	Montreal	Lockerby, Robert A.,	Montreal
Barwick, William S.,	Barrie, O	Mackay, Eric,	St. John's, Newfoundland
Beck, Alfred E.,	Penetanguishene, O	Maclaren, Francis H.,	Huntington, Q
*Beauchamp, Leon,	Montreal	MacLeod, Russell M.,	Toronto, O
Bigger, Howell,	Ottawa, O	Mathers, William R.,	St. John, N.B
*Blanchet, John S.,	Quebec, Q	McBride, Wilbert G.,	Ingelwood, O
Brainerd, Herbert W.,	Montreal	*McLean, D. Jerrold,	Charlottetown, P.E.I
*Browne, H. Dalzell,	Montreal	Meldrum, Robert H.,	Montreal
Campbell, Charles McK.,	Winnipeg, Man	*Meyers, Archie J.,	Listowel, O
Cape, Ernest K.,	Hamilton, O	Mitchell, George G.,	Toronto, O
Cardell, Alfred E.,	Conmore, Alt., N.W.T	Murphy, William E.,	Shelburne, N.S
Cassils, Charles W.,	Montreal	Newton, Samuel R.,	Drummondville, Q
Corless, Charles W.,	New Durham, O	Onderdonk, Arthur,	Hamilton, O
Coulson, John L.,	Toronto, O	Pearson, Hartley M.,	Huntington, Q
Crawford, Stuart,	Montreal	Peck, T. Esmond,	Montreal
*Cummings, Eugene W. D.,	Truro, N.S	*Porter, William J.,	Douglastown, N.B
Cushing, Gordon C.,	Montreal	Pratt, Stephen S.,	Cranbrook, B.C.
De Pencier, Henry P.,	Vancouver, B.C.	*Prefontaine, Rolland,	Montreal
*Dobbin, Cyril E. B.,	Montreal	Ralph, Claude E.,	Ottawa, O
Dunfield, John C. W.,	St. John's, Nfld	Robertson, John F.,	Charlottetown, P.E.I
Dupuis, Albert,	Montreal	*Scott, Harry E.,	Napanee, O
Dutcher, Howard K.,	Charlottetown, P.E.I.	Sewell, Alexander L.,	Quebec, Q
Edgar, John H.,	Montreal	Smith, Gerald,	St. Johns, Q
*Evans, William H.,	Montreal	Smith, J. Macdonald,	Petitcodiac, N.B
*Harris, Allan Dale,	Ottawa, O	Smith, Ralph E.,	Windsor, N.S
*Harris, Spencer L. Dale,	Ottawa, O	Sterns, Frank E. Morrell,	P.E.I
Hayne, Fergus C.,	Montreal	*Stuart, Charles J.,	Montreal
Hicks, Thomas N.,	Perth, O	Trenholme, Harold W.,	Montreal
Horsfall, Herbert,	Lachine Locks, Q	*Trimingham, Charles L.,	Barbadoes, W.I
*Hutchings, George R.,	Hamilton, Bermuda	Walsh, William N.,	Ormstown, Q
*Hutchings, Somers C.,	Hamilton, Bermuda	*Ward, Roger,	Montreal
Jackson, Philip T.,	Toronto, O	*Watson, Robert G.,	Montreal
*Johnston, Christopher F.,	San Diego, Cal., U.S.A.	Weagant, Roy A.,	Derby Line, Vt., U.S.A
Kerr, Alison P. R.,	Montreal	Whiteway, F. H. Clare,	St. John's, Newfoundland
Labelle, Joseph,	Montreal	Whitley, Herbert A.,	Montreal
		Yuile, Herbert,	Montreal

SECOND YEAR.

Archer, Augustus R.,	New York, U.S.A
Askwith, Charles E.,	Ottawa, O
Blanchard, Arthur C. D.,	Windsor, N.S
Blue, Allen P.,	Eustis, Q
Boyd, Hugh ⊔.,	Montreal
Brecken, Walter R.,	Charlottetown, P.E.I
Burchell, George B.,	New Campbellton, N.S
Burson, Herbert A.,	St. Catharines, O
Burwell, Ernest V.,	London, O
Cameron, Hugh D.,	Montreal
Cary, George M.,	Goderich, O
Clement, Sheldon B.,	Clinton, O
Coote, Sydney R.,	St. Albans, Vt., U.S.A
*Cowen, Edwin A. A.,	Montreal
DeBlois, William H.,	Halifax, N.S
Edwards, William M.,	Ottawa, O
Fleming, James M.,	Halifax, N.S
Flint, William G.,	Montreal
Fraser, Donald C.,	New Glasgow, N.S
Frechette, Howells,	Ottawa, O
Fry, David M.,	Bright, O
Gagnon, Edmund E.,	Montreal
Galbraith, Malcolm T.,	Montreal
Glassco, Archie P. S.,	Hamilton, O
Hampson, E. Greville,	Montreal
Higman, Ormond,	Ottawa, O
Howard, Rupert F.,	Lachine, Q
Jamieson, George E. T.,	Montreal
Kane, Roderick A. C.,	Montreal
Labatt, John S.,	London, O
Lloyd, Herbert M.,	New Westminster, B.C
Lowden, Warden K.,	Montreal
McKenzie, Bertram S.,	London, O
McLaren, John,	Montreal
Millar, James L.,	Pembroke, O
Ogilvie, Paul,	Cummings' Bridge, O
Palmer, Ernest E.,	Toronto, O
Paterson, Charles S.,	Montreal
Pyke, Gordon McT.,	Montreal
Reynolds, Leo B.,	Waterford, O
Ritchie, Joseph N.,	Halifax, N.S
Schwitzer, Thomas H.,	Ottawa, O
Scott, Henry M.,	Montreal
Taylor, Charles W.,	Richwood, O
Tupper, Charles,	Vancouver, B.C
Wakeling, Otty S.,	St. John, N.B
Ward, Percy W.,	Lachine, Q
*Watson, Hugh,	Montreal
Wells, Samuel S.,	Montreal
White, Gerald V.,	Pembroke, O
*Whiteway, Wm. V. E.,	St. John's, Nfld
Wilson, Thomas A.,	Waverley, Halifax Co., N.S

THIRD YEAR.

Allen, Samuel J.,	Maitland, N.S.
Anglin, James P.,	Kingston, O
Arkley, Lorne M.,	East Angus, Q
Barber, Rene R.,	Georgetown, O
Black, Thompson T.,	Sackville, N.B.
Buchanan, Fitzherbert P.,	Montreal
Buffett, Aaron F.,	Grand Bank, Nfld.
Burgogne, Stanley J.,	Halifax, N.S.
Byers, Archibald F.,	Gananoque, O
Corriveau, Raoul de B.,	Iberville, Q
Coussirat, Henri A.,	Montreal
Cowans, Frederick,	Montreal
Donaldson, Hugh W.,	Hamilton, O
Duncan, G. Rupert,	Montreal
Ewart, Geo. R.,	Kilauea, Kanai, Hawaiian Islands
Fraser, John W.,	Charlottetown, P.E.I
Forman, Andrew S.,	Montreal
Gillean, R. Hampson,	Montreal
Glassco, Jack G.,	Hamilton, O
Hamilton, Geo. M.,	Peterboro, O
*Howard, Lawrence O.,	Lachine, Q
Maclaren, George McG.,	Ottawa, O
Macmaster, Arthur W.,	Montreal
Macmillan, George P.,	Petrolia, O
Miller, Angus K.,	Bridgeburg, O
Montgomery, George,	Morrisburg, O
Moore, Ernest V.,	Peterborough, O
Nelson, George J.,	Halifax, N.S.
Neville, Thos. P. J.,	Halifax, N.S.
Osborne, J. Ewart,	Toronto, O
*Parizeau, Henri D.,	Boucherville, Q
Percy, Howard M.,	Montreal
Robertson, Philip W. K.,	Mexico City, Mexico
Shepherd, Harry L.,	Brockville, O
Sise, Paul F.,	Montreal
Smith, George B.,	Stratford, O
St. George, Harry L.,	Montreal
*Staveley, Edward B.,	Quebec
Walker, Frank W.,	Montreal

FOURTH YEAR.

Archibald, Ernest M.,	Halifax, N.S
Austin, Claude V. C.,	Ottawa, O
Bachand, George A.,	Montreal
Blaylock, Selwyn G.,	Danville, Q
Bowman, Archibald A.,	N. Glasgow, N.S.
Burgess, R. Earl,	Wolfville, N.S.
Campbell, Norman M.,	Montreal
Colpitts, Walter W.,	Moncton, N.B.
Dargavel, James S.,	Elgin, O
Davidson, William A.,	Peterboro, O

Denis, Leopold,	Montreal	McLean, William B.,	Pictou, N.S
Ewan, Herbert M.,	Montreal	McLeod, Norman M.,	Montreal
Fetherstonhaugh, Edward P.,	Montreal	Moore, William, M.A.,	Ottawa, O
Fraser, Charles E.,	Montreal	Morgan, Charles B.,	Hamilton, O
Fraser, Harold,	Brockville, O	Nicholls, Harry G.,	Toronto, O
Fraser, James W.,	Bridgeville, N.S.	Peden, Frank,	Montreal
Gagnon, Louis F.,	Montreal	Pergau, Harry,	Lyn, O
Gisborne, Lionel L.,	Montreal	Pitcher, Norman C.,	Stanstead, Q
Gough, Richard T.,	Halifax, N.S.	Preston, John A.,	Toronto, O
Grier, Arthur G.,	Montreal	Shaw, John A.,	Montreal
Hawker, James T.,	St. John, N.B.	Stevens, Angus P.,	Dunham, Q
Hickey, John V.,	Montreal	VanHorne, Richard B.,	Montreal
Hutchinson, William S.,	Montreal	Waller, George W.,	Bartonville, O
Hyde, George T.,	Montreal	Wenger, Edgar I.,	Ayton, O
Hyde, James C.,	Montreal	Whyte, John S.,	Osgood, O
Kirkpatrick, Stafford F.,	Kingston, O	Wilson, Robert M.,	Montreal
MacInnes, Henry W.,	Halifax, N.S.	Yorston, Louis,	Pictou, N.S.
McLaren, Archibald J.,	Montreal	Young, William M.,	Renfrew, O
McLea, Ernest H.,	Montreal	Yuile, Norman M.,	Montreal

POST GRADUATES.

McCarthy, Geo. A., B.A.Sc.,	Moncton, N.B.	Scott, James H.,	Outremont, Q

Partial Students.

Atherton, Harold S.,	Bolton, Eng.	Lewis, Francis B.,	Nottingham, Eng.
Cunningham, Lawrence H.,	London, Eng.	Macdonald, Miss M. L.,	Montreal
Harvey, Herbert,	London, Eng.	MacVicar, John,	Harrietsville, O
Henry, Arthur R.,	Quebec	Oulton, George J., M.A.,	Moncton, N.B.
Hersey, Milton L., B.A.Sc.,	Montreal	Redpath, Miss H.,	Montreal
Howden, Miss J.,	Montreal	Sands, Henry H.,	Montreal
Irwin, Miss M. E.,	Montreal	Scott, George W.,	Montreal
		Sparrow, Miss W.,	Montreal

FACULTY OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE.

FIRST YEAR.

Kennedy, Geo. A.,	Hemmingford, Q	Rork, John T.,	Boston, Mass.
Manchester, Walter,	Sussex, N.B.	Tamblyn, David,	Berks, Eng.
Paquin, Chas. H.,	Barre, Mass.		

SECOND YEAR.

Allen, Frank T.,	Springfield, Mass.	Stanbridge, Geo. W.,	Hubbardston, Mass.
Humphreys, B. F.,	Boston, Mass.		
Smith, W. C.,	Winnipeg, Man.		

THIRD YEAR.

Gellatly, George,	Huntingdon, Q	Henderson, Colin M.,	Montreal
Groves, J. W.,	Hamilton, O	Kato, Y.,	Tokyo, Japan
Hammond, E. W.,	Montreal	McGregor, James,	Aubrey, Q

COLLEGES AFFILIATED IN ARTS.

MORRIN COLLEGE, QUEBEC.

Undergraduates.

FIRST YEAR.

Fyles, Winifred,
Gibsone, George F.,
Kinnear, Jas. Alex.,
Miller, Wm. E. C.,
Munn, Emma M.,
Raymond, Florence M. C.,

SECOND YEAR.

Fraser, Ella M,
Nicholson, Wm.,
Reid, A. S..
Ritchie, Jessie R.,
Smith, Esther M.,

THIRD YEAR.

Fyles, Faith,
Laverie, Jas. H.,
MacRae, D. N.,

FOURTH YEAR.

Jackson, Emma,
Meiklejohn, Harriet T.,
Seifert, Fred W.

Partial Students.

Beemer, Miss S.,
Bishop, Miss B.,
Duffet, Miss Grace,
Dunkerly, Miss Cora,
Duplessis, Captain,
Forrest, Miss Adah M.,
Foulds, Mr. Archibald,
Foulds, Mrs. Archibald,
Fry, Miss,
Gibsone, Miss,
Glass, Miss K.,
Graham, Robt. M.,
Levasseur, Major,
Macdonald, Miss E.,
MacLeod, Miss Effie,
MacNaughton, Mr. F.
MacRae, Rev. D.,
MacRae, Mrs. D.,
MacRae, Miss V.,
Marsh, Mrs.,
Pope, Miss B.,
Pope, Miss Louisa,
Poston, Mrs.,
Reid, Miss,
Ritchie, Miss M.,
Rothney, W. O.,
Scott, Miss R.,
Simpson, Miss,
Staveley, Miss,
Symonds, Wm.,
Tait, Rev. D.,
Thomson, Miss,
Tremaine, Miss L. L.,
Tremaine, Miss T. F.,
Turner, Miss E.,
Vincent, Miss,
Webster, Miss S. R,
Walton, Mrs. F. W.
Woodside, Mr.

189899

SUMMARY.

Students in Law, McGill College			67
" in Medicine, "			447
" Arts:— "			
Men	Graduates	4	
	Undergraduates	139	
	Partial	67	296
Women	Graduates	8	
	Undergraduates	47	
	Partial	31	
Students in Arts, Morrin College			56
" " Applied Science, McGill College:—			
	Undergraduates, Partial and Graduates		231
" " Veterinary Science			15
			1112
McGill Normal School, Teachers-in-training			158
			1270
Deduct, repeated in different lists			22
Total			1248

Observatory.

Latitude, N. 45° 30′ 17″. Longitude, 4^h 54^m $18^s.67$.

Height above sea level, 187 ft.

Superintendent—C. H. McLeod, Ma.E.

Meteorological Observations are made every fourth hour, beginning 3^h 0^m Eastern standard time; also at 8^h 0^m and 20^h 0^m. Independent series of bi-hourly temperature observations are also made. (This series will shortly be replaced by an automatic temperature record by means of the Callendar recorder.) The principal instruments employed are two standard mercurial barometers; one Kew standard thermometer; two Pastorelli thermometers; one maximum thermometer; one minimum thermometer; one set of six self-recording thermometers, with controlling clock, battery, etc.; two anemometers; one wind vane; one anemograph, with battery, etc.; one sunshine recorder; one rain-band spectroscope; and one rain gauge.

The Anemometer and Vane are on the summit of Mount Royal at a point about three-quarters of a mile north-west of the Observatory. They are 57 feet above the surface of the ground and 810 feet above sea level.

Soil temperatures are observed, in co-operation with the Physical Laboratory, by means of platinum thermometers at depths ranging from one inch to nine feet.

The Astronomical Equipment consists of:—The Blackman Telescope (6¼ in.); a photoheliograph (4½ in.); a 3¼ in. transit with striding level, etc.; a prismatic (8 c.m.) transit instrument, also arranged as a zenith telescope; a 2 in. transit in the prime vertical; two collimating telescopes; one sidereal clock; one meantime clock; one sidereal chronometer; one meantime chronometer; one chronograph; batteries, telegraph lines and sundry minor instruments.

Observations for clock errors are made on nearly every clear night. Time signals are distributed throughout the city by means of the noon time-ball, continuous clock signals, and the fire alarm bells; and to the country, through the telegraph lines.

The longitude of the Observatory was determined in 1892 by direct telegraphic connection with Greenwich and with exchange of observers and instruments. The position is believed to be the most accurately determined in America.

Courses of instruction are given in the use of the meteorological instruments, see page 88, and in astronomical work to the Fourth Year Students in the Civil Engineering Courses, see page 123.

University Gymnasium.

Medical Examiner and Instructor.—R. TAIT MCKENZIE, B.A., M.D.

The classes, which are open to Students of all the Faculties, will meet at the University Gymnasium, at hours to suit, as far as possible, the convenience of Students, and which will be announced at the commencement of the Session.

The recent addition of some special apparatus enables the instructor to devote some attention to the application of exercise in treating special cases of weakness or deformity, which should be reported to him before the regular class work is undertaken.

THE WICKSTEED SILVER AND BRONZE MEDALS FOR PHYSICAL CULTURE (the gift of Dr. R. J. Wicksteed) are offered for competition to Students of the graduating class and to Students who have had instruction in the Gymnasium for two sessions; the silver medal to the former, the bronze medal to the latter.

The award of these medals is made by Judges, appointed by the Corporation of the University.

Every competitor for the silver medal is required to lodge with the Judges, before the examination, a certificate of good standing in the graduating class signed by the Dean or Secretary of the Faculty to which he belongs, and the medal will not be awarded to any Student who may fail in his examination for the degree.

Classes for Women Students will be conducted in the new gymnasium of the Royal Victoria College by qualified lady instructors.

REGULATIONS

CONCERNING THE MANAGEMENT OF

THE COLLEGE GROUNDS AND ATHLETICS.

All matters relating to the management of the College grounds and of Out-Door Athletics and Sports are under the control of a Committee consisting of:—

One Governor.
The Principal.
One Member of the Faculty of Arts.
One Member of the Faculty of Applied Science.
One Member of the Faculty of Law.
One Member of the Faculty of Medicine.
One Member of the Faculty of Comp. Medicine.
One Graduate.
One Undergraduate, member of the Football Club.



Part of Campus, with Museum in Background.

One Undergraduate, member of the Tennis Club.
One Undergraduate, member of the Cricket Club.
One Undergraduate, member of the Hockey Club.
The President of the Athletic Association.

The several Members of the Committee are elected annually by their respective bodies; and the Committee meets for organization on the first Saturday of February in each year. The Undergraduate Members of the Committee are entitled to vote only on matters relating to Athletics.

The following extracts are made from the rules and regulations of the Committee, for the guidance of Members of the University and the several Athletic Clubs and Associations which are from time to time permitted to use the grounds:

The University and McTavish Street gates shall be closed between 6 p.m. and 7 a.m. on week days and the whole day on Sunday.

The Sherbrooke Street gates shall be closed between 10 p.m. and 6 a.m.

Such persons as are entitled to use the Grounds shall be provided with tickets renewable each year.

Those entitled to tickets are the Members of the University, and Prominent Benefactors, and the families of Governors and Professors.

The several Clubs shall be permitted to issue special tickets (without charge), entitling the holders to admission to the Grounds for the purpose of viewing matches, or for other special occasions of public interest.

All Students desirous of taking part in football matches, or otherwise engaging in violent athletic contests, must pass a medical examination, to be held under the direction of the Superintendent of the Gymnasium. A complete record of all such examinations shall be kept by the Superintendent or other officer appointed to this duty.

All Clubs must submit their Regulations, Rules and By-Laws, and any changes in the same, for the approval of the Committee. They must make application for the use of such portions of the Grounds as they require, and for any special privileges.

All organized games must be under the auspices of a recognized club, and all persons taking part in games on the grounds must be dressed in club costume or "flannels."

The Athletic Association must submit its programme for each year for the approval of the Committee.

All Undergraduates of the University are required to pay a fee of two dollars ($2.00) for the use of the Grounds. The amount so paid is handed over to the Committee, and is by it expended in the interest of College Athletics and in the permanent improvement of the Grounds.

University Societies.

GRADUATES' SOCIETY OF McGILL UNIVERSITY.

INCORPORATED 24TH JULY, 1880.

Officers 1898-99.

President—C. W. Colby, M.A., Ph.D.

Vice-Presidents—Miss H. R. Y. Reid, B.A.; Miss C. M. Derick, M.A.; Peers Davidson, M.A.

Secretary—Homer M. Jaquays, B.A., B.A.Sc.

Treasurer—Francis Topp, B.A., B.C.L.

Resident Councillors—F. D. Adams, M.A.Sc., Ph.D.; M. C. Baker, D.V.S.; Arch. MacArthur, B.A.; A. R. Holden, B.A., B.C.L.; A. R. Hall, B.A., B.C.L.; Chas. Wilson, M.D.

Non-Resident Councillors—Hon. W. W. Lynch, D.C.L., Knowlton, Que.; Rev. E. H. Krans, LL.D., New York; S. J. Tunstall, B.A., M.D., C.M., Vancouver B.C.; W. W. White, M.A., M.D., St. John, N.B.; Robert H. Conroy, B.C.L., Aylmer, Que.; J. J. MacLaren, Q.C., LL.D., Toronto, Ont.

McGILL APPLIED SCIENCE SOCIETY.

Hon. President—Dr. H. T. Bovey.

Advisory Committee—Prof. F. D. Adams, J. M. McCarthy, M. L. Hersey, A. L. Mudge, R. F. Ogilvy.

Hon. Sec.-Treasurer—J. G. G. Kerry (Engineering Building, McGill University).

President—R. H. Gillean, Mining and Chemistry, '00.

1st Vice-President—J. T. Anglin, Civil and Architecture, '00.

2nd Vice-President—J. G. Glassco, Electrical, '00.

3rd Vice-President—A. W. MacMaster, Mechanical, '00.

Secretary—B. S. McKenzie, '01.

Treasurer—E. E. Palmer, '01.

2nd Year Representatives—A. E. Beck and H. E. Scott.

Editorial Board—G. M. Cary, '00, Chairman; S. J. Burgoyne, '00; G. M. Hamilton, '00; H. A. Burson, '01.

ALUMNÆ SOCIETY OF McGILL UNIVERSITY.

President—Georgina Hunter, B.A.
Vice-Presidents—Kate M. Campbell, B.A.; Jessie Brown, B.A.
Cor. Secretary—Frances R. Angus, B.A.
Assistant Cor. Sec.—Muriel Carr, B.A.
Rec. Secretary—Elizabeth Hall, B.A.
Assistant Rec. Sec.—J. Ethel Hurst, B.A.
Treasurer—Eleanor Tatley, B.A.
Additional Members of Committee of Management of Girls' Club—Helen R. Y. Reid, B.A.; Carrie M. Derick, M.A.; L. Ethel Armstrong, B.A.

OTTAWA VALLEY GRADUATES' SOCIETY OF McGILL UNIVERSITY.

ORGANIZED 1890.

Hon. President—The Right Hon. Sir Wilfrid Laurier, P.C., K.C.M.G., LL.D.
President—William C. Cousens, M.D., C.M.
Vice-Presidents—George C. Wright, B.A., B.C.L.; A. E. Barlow, M.A.; E. L. Quirk, M.D., C.M.
Secretary—H. M. Ami, M.A., D.Sc. (Geological Survey, Ottawa.)
Treasurer—J. H. Larmonth, B.A.Sc.
Council—R. W. Ells, LL.D.; R. H. Conroy, B.C.L.; D. B. Dowling, B.A.Sc.; W. Bell Dawson, M.A., Ma.E.; M. F. Connor, B.A.Sc.

NEW YORK GRADUATES' SOCIETY OF McGILL UNIVERSITY.

ORGANIZED 1895.

President—Rev. Edward H. Krans, M.A., LL.D.
1st Vice-President—Wolfred Nelson, M.D., C.M., F.R.G.S.
2nd Vice-President—James A. Meek, M.D., C.M.
3rd Vice-President and Treasurer—Hiram N. Vineberg, M.D., C.M.
Secretary—W. Ferguson, M.D., C.M., 948 E. 166th St., New York.
Executive Committee—Rev. J. J. Rowan Spong, M.A., B.C.L., LL.B.; Geo. C. Becket, M.D.; Harcourt Bull, B.A.
Non-Resident Councillors—Right Rev. J. D. Morrison, M.A., D.D., Bishop of Duluth; Rev. Charles Bancroft, M.A., Sanbornville, N.H.; Wm. Osler, M.D., C.M., F.R.C.P.L., F.R.S., Baltimore, Md.; Thomas Kelly, M.D., C.M., Omaha, Neb.; Rev. J. C. Bracq, Vassar College, N. Y.; H. Holton Wood, B.A., Boston, Mass.

McGILL GRADUATES' SOCIETY OF TORONTO.

ORGANIZED 1896.

President—J. J. MacLaren, Q.C., LL.D.
1st Vice-President—H. A. Burritt, M.D.
2nd Vice-President—A. R. Lewis, B.A., Q.C.
Secretary—R. B. Henderson, B.A., 48 King Street, West.
Treasurer—A. H. U. Colquhoun, B.A.
Executive Committee—J. Algernon Temple, M.D.; C. Swabey, B.A.; P. E. Ritchie, B.A.; Rev. Canon Sweeney, D.D.; George Pringle, M.D.; Frank Pedley, B.A.

THE BRITISH COLUMBIA SOCIETY OF GRADUATES' OF McGILL UNIVERSITY.

President—W. A. Carlyle, Ma.E. (Rossland).
Vice-Presidents—J. M. McGregor, B.A., B.A.Sc. (Slocan City); Walter Hunter, B.A. (Nanaimo); Rev. W. Leslie Clay, B.A. (Victoria); Rev. H. M. McIntosh, B.A. (Vancouver).
Secretary—W. J. McGuigan, M.D., LL.B. (Vancouver).
Treasurer—Simon J. Tunstall, B.A., M.D. (Vancouver).
Executive Committee—D. B. Holden, B.A., M.D. (Victoria); Hon. R. E. McKechnie, M.D. (Nanaimo); G. W. Boggs, M.D. (New Westminster); J. M. Lefevre, M.D. (Vancouver); J. C. Guillim, B.A.Sc. (Slocan City).

THE NEW BRUNSWICK GRADUATES' SOCIETY OF McGILL UNIVERSITY.

ORGANIZED 1896.

President—F. H. Wetmore, M.D. (Hampton, N.B.).
Vice-President—B. S. Price, M.D. (St. John, N.B.).
Secretary-Treasurer—J. H. Scammel, M.D. (76 Waterloo street, St. John, N.B.).
Executive Committee—J. H. King, M.D.; W. L. Ellis, M.D.

NOVA SCOTIA SOCIETY OF McGILL GRADUATES.

ORGANIZED 1896.

Hon. President—Rev. Robert Laing, M.A. (Halifax).
President—John McMillan, M.D. (Pictou).
1st Vice-President—F. S. Yorston, M.D. (Truro).
2nd Vice-President—James Ross, M.D. (Halifax).
Sec.-Treasurer—W. H. Hattie, M.D. (Nova Scotia Hospital for the Insane, Halifax).
Executive Committee—A. I. Mader, M.D.; Wm. Jakeman, D.V.S.; E. A. Kirkpatrick, M.D.; J. W. Clarke, M.D.

McGILL GRADUATES' SOCIETY OF THE DISTRICT OF BEDFORD.

ORGANIZED 1898.

Hon. President—Hon. W. W. Lynch, D.C.L. (Knowlton).
President—Rev. E. M. Taylor, M.A. (Cowansville).
Vice-Presidents—C. A. Nutting, B.C.L. (Waterloo); R. T. E. MacDonald, M.D. (Sutton); Hon. J. C. McCorkill, B.C.L. (Cowansville).
Sec.-Treasurer—W. O. Lambly, M.D., C.M. (Knowlton).

NEW ENGLAND SOCIETY OF McGILL GRADUATES.

ORGANIZED 1899.

President—John S. McLennan, B.A. (Boston).
1st Vice-President—G. A. Fagan, M.D. (North Adams).
2nd Vice-President—Arthur E. Childs, B.A.Sc. (Boston).
3rd Vice-President—Rev. J. F. Langton, M.A. (Waltham).
Secretary-Treasurer—Charles E. Cameron, M.D., (Box 3271, Boston).
Councillors—H. Holton Wood, B.A., (Derby); Jos. Williams, M.D., (Boston); Miles M. Martin, M.D., (Boston); Robert MacDougall, M.A., Ph.D. (Cambridge); John M. Parker, D.V.S. (Haverhill).

UNDERGRADUATES' LITERARY SOCIETY.

CONSTITUTED 1880.

President—Lemuel Robertson, Arts, '99.
1st Vice-President—E. G. Place, Law, '01.
2nd Vice-President—J. Appleton Nutter, Arts, '00.
Treasurer—D. M. Rowatt, Law, '01.
Secretary—C. J. Macmillan, Arts, '00.
Assistant Secretary—G. L. Ogilvie, Arts, '02.
Committee—A. R. McMaster, B.A., Law, '01; F. S. Patch, Arts, '99; Robert Elder, Arts '00; E. E. Brown Arts, '01; W. G. Macnaughton, Arts, '01.

DELTA SIGMA SOCIETY.

ESTABLISHED 1884.

President—Mary H. Dey.
Vice-President—Evelyn Molson.
Sec-Treasurer—Elizabeth Irving.
Committee—Kathleen Finley, B.A.; Winifred Bennett; Isabel Radford.

McGILL COLLEGE CLASSICAL CLUB.

For the purpose of fostering a greater interest in and promoting the further study of Classical Languages, Literature and Art.

Hon. President—Principal Peterson.
Hon. Treasurer—Prof. A. Judson Eaton, Ph.D.
President—

McGILL HISTORICAL CLUB.

President—Ed. C. Woodley, Arts, '00.
Vice-President—E. G. Place, B.A., Law, '01.
Secretary—H. S. Williams, Arts, '01.
Executive Committee—Prof. C. W. Colby, M.A., Ph.D.; J. DeWitt, Arts, '00; W. S. Chipman, Arts, '01.

THE McGILL MINING SOCIETY.

ORGANIZED 1891.

Hon. President—Dr. B. J. Harrington.
President—G. P. Macmillan, App. Sc., '00.
Vice-President—F. Cowans, App. Sc., '00.
Sec.-Treasurer—A. R. Archer, App. Sc., '01.

YOUNG MEN'S CHRISTIAN ASSOCIATION OF McGILL UNIVERSITY.

OBJECT.—To promote the piety of its members and the cause of Christianity in the University.

MEMBERSHIP.—The active Membership of the Association shall consist of Graduates and Students of the University who are members of some Protestant church. Any Graduate and Student of good moral character may become an associate member. A social reception is given to new students at the beginning of the session.

OFFICERS FOR 1899-1900.

Hon. President—Sir J. W. Dawson.
President—E. C. Woodley, Arts, 1900.
1st Vice-President—J. R. Cox, Med., 1900.
2nd Vice-President—H. A. Burson, App. Sci., 1901.
Rec. Secretary—A. E. Doull, Med., 1900.
Treasurer—W. H. DeBlois, App. Sc., 1901.
Assist. Treasurer—L. M. Curran, Med., 1902.
General Secretary—George Irving, Arts, 1901.

CHAIRMEN OF COMMITTEES.

Religious Meetings—Prof. H. F. Armstrong.
Bible Study—W. G. MacNaughton, Arts, 1901.
Social—F. J. Tees, Arts, 1901.
Membership—J. R. Cox, Med., 1900.
Missionary—C. McPherson, Med., 1900.
Musical—A. E. Doull, Med., 1900.
Finance—W. H. DeBlois, App. Sci., 1901.
Work for New Students—Geo. Irving, Arts, 1901.
Building—E. C. Woodley, Arts, 1900.
Graduates—W. F. Hamilton, M.D.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION.

ESTABLISHED 1887 (AS THEO DORA SOCIETY).

OBJECT.—The development of Christian character in the members, and the development of active Christian work, particularly among the young women of the University. Open for membership to students of the Royal Victoria College for Women.

SESSION 1899-1900.

President—Edythe Garlick.
Vice-President—Winifred Bennett.
Cor. Secretary—Lillian Smith.
Rec. Secretary—Elizabeth Irving.
Treasurer—Jessie McLachlan.

CONVENERS OF COMMITTEES.

Devotional—Mary H. Dey.
Theo Dora—Harriet Page.
Membership—Lillian Smith.
Relief—Helen Rorke.

McGILL UNIVERSITY ATHLETIC ASSOCIATION.

ESTABLISHED 1884.

Hon. President—Principal Peterson.
President—Percy Molson, Arts, '01.
Vice-President—P. F. Sise, App. Sc., '00.
Secretary—P. W. K. Robertson, App. Sc., '00.
Hon. Treasurer—Prof. S. H. Capper.
Treasurer—C. J. Macmillan, Arts, '00.
Representatives—Arts: J. Henry Boulter, '01; Applied Science: A. F. MacMaster, '00; Medicine: W. B. McDiarmid, '00; Law: A. Dobell, '00.

McGILL UNIVERSITY FOOTBALL CLUB.

Hon. President—Dr. N. D. Gunn.
Hon. Treasurer—Prof. C. H. McLeod.
President—A. C. P. Howard, B.A., Med., '01.
Vice-President—W. G. Turner, B.A., Med., '00.
Hon. Secretary—F. S. Patch, B.A., Med., '03.
Treasurer—H. W. Trenholme, App. Sc., '02.
Manager—A. F. Byers, App. Sc., '00.
Committee—Arts: E. G. McKinnon, '00, P. Molson, '01; Medicine: A. R. Hall, '00, D. Mackay, '01; Law: J. J. Meagher, '01, W. Leslie, '01; Applied Sc.: P. F. Sise, '00, A. E. Beck, '02.

McGILL UNIVERSITY CRICKET CLUB.

Hon. President—Lord Strathcona and Mount Royal.
President—Prof. C. E. Moyse.
Vice-President—A. R. Oughtred, B.C.L.
Sec.-Treasurer—Herbert M. Little, Med., '01.
Assist. Secretary—Hugh W. Wonham.
Committee—A. B. Wood, B.A.; John F. Mackie, B.C.L.; R. DeL. Johnson, Med., '01; R. Kane, App. Sc., '01; H. Cyril Hill.

McGILL UNIVERSITY LAWN TENNIS CLUB.

Hon. President—Prof. Capper.
President—J. A. Fairie, Med., '02.
Vice-President—L. Macfarlane, Law, '00.
Secretary—A. R. Holden, Law, '01.
Treasurer—E. A. Grafton, M.D.
Committee—Arts: R. Hickson; Law: J. J. Meagher; App. Sc.: J. E. K. Osborne; Medicine: J. L. Todd; Graduates: J. K. Kennedy B.C.L.

McGILL UNIVERSITY SKATING CLUB.

President—F. S. Patch, Arts, '99.
Vice-President—C. F. L. Haszard, Med., '00.
Secretary—A. Lorne C. Gilday, Arts, '99.
Treasurer—R. Hickson, Arts, '01.
Committee—Medicine: F. Haszard, '00, A. H. Marlaren, '02, A. L. C. Gilday, '00; Applied Science: N. M. Yuile, '99, T. T. Black, '00; A. F. MacMaster, '00; Arts: F. S. Patch, '99, C. G. MacKinnon, '00, R. Hickson, '01; Law: J. J. Meagher, '01, G. H. Baker, '00; Comp. Med.: B. F. L. Humphreys, '00, W. Smith, '00.

McGILL HOCKEY CLUB.

Hon. President—Professor Capper.
President—C. Cartwright, Med., 1900.
Vice-President—C. K. Russel, Med., '01.
Sec.-Treasurer—J. H. Jones, Med., '01.
Captain—R. Howard, App. Sc., '01.
Representatives—Applied Science: Geo. Montgomery, '00; Yuile, '99; Medicine: E. R. Belanger, '01; Patterson, ; Arts: G. W. Grier, '00; J. H. Copeman, '01; Law: S. G. Archibald, '00; H. Baby '99.

BENEFACTORS OF

McGill University, Montreal.

I. GENERAL ENDOWMENTS AND SUBSCRIPTIONS.

1. ORIGINAL ENDOWMENT, 1811.

THE HONORABLE JAMES McGILL, who was born at Glasgow, 6th Oct., 1744, and died at Montreal, 19th Dec., 1813, by his last will and testament, under date 8th Jannary, 1811, devised the estate of Burnside, situated near the city of Montreal, and containing forty-seven acres of land, with the Manor House and Buildings thereon erected, and also bequeathed the sum of ten thousand pounds in money unto the "Royal Institution for the Advancement of Learning," a Corporation constituted in virtue of an Act of Parliament passed in the Forty-first Year of the Reign of His Majesty, King George the Third, to erect and establish a University or College, for the purpose of Education and the advancement of learning, in the Province of Lower Canada, with a competent number of professors and teachers to render such Establishment effectual and beneficial for the purposes intended; requiring that one of the colleges to be comprised in the said University should be named and perpetually be known and distinguished by the appellation of "McGill College."

The value of the above mentioned property was estimated at the date of the bequest at..... $120,000

2. UNIVERSITY BUILDINGS, ETC.

THE WILLIAM MOLSON HALL, being the west wing of McGill College buildings, with the connecting Corridors and Class Rooms, was erected in 1861, through the munificent donation of the founder, whose name it bears.

THE PETER REDPATH MUSEUM, the gift of the donor, whose name it bears, was announced by him as a donation to the University in 1880, and formally opened August, 1882.

Lots for University buildings adjoining the College grounds confronting on McTavish St., presented by J. H. R. Molson, Esq.,—$42,500.

THE UNIVERSITY LIBRARY BUILDING, the gift of Peter Redpath, Esq., announced by him as a gift to the University in 1891, and formally opened October 31st, 1893.

UNIVERSITY OFFICES, Rooms in East Wing remodeled and furnished for offices of Principal and Secretary and for a Board Room, by Wm. C. Macdonald, Esq., in 1895.

3. ENDOWED CHAIRS, ETC.

THE JOHN FROTHINGHAM PRINCIPAL FUND, to be invested for the endowment of the Principalship of the University; founded in 1889 by the Rev. Frederick Frothingham and Mrs. J. H. R. Molson,—$40,000.

THE WILLIAM C. MACDONALD AUXILIARY FUND, founded in 1897 by Wm. C. Macdonald, Esq., the interest to be used solely to maintain the income of certain of his endowments on a five per cent. per annum basis,—$278,750.

4. ENDOWMENTS AND DONATIONS OF MEDALS AND PRIZES.

In 1883, a Gold, a Silver and a Bronze Medal were given by R. J. Wicksteed, Esq., M.A., LL.D., for competition in "Physical Culture," by Students in the Graduating Class and second year of any Faculty, who have attended the University Gymnasium. The Gold Medal was continued to 1889 and the Silver and Bronze have been continued to date.

Ottawa Valley Graduates' Society's Exhibition. For competition by candidates from the Ottawa Valley at the June matriculation examinations of any Faculty. Value, $50.00. Given annually since 1895.

A Prize given by the British Columbia Society of Graduates of McGill University to be divided amongst the five Faculties. Annual value $50.00. Given annually since 1896.

5. SUBSCRIPTIONS TO GENERAL ENDOWMENT.

1856.

John Frothingham, Esq	$2000
John Torrance, Esq	2000
James B. Greenshields, Esq	1200
Wm. Busby Lambe, Esq	1200
Sir George Simpson, Knight	1000
Henry Thomas, Esq	1000
John Redpath, Esq	1000
James McDougall, Esq	1000
James Torrance, Esq	1000
Hon. James Ferrier	1000
Harrison Stephens, Esq	800
Henry Chapman, Esq	600
Hon. Peter McGill	600
John James Day, Esq	600
Thomas Brown Anderson, Esq	600
Peter Redpath, Esq	600
Thomas M. Taylor, Esq	600
Joseph Mackay, Esq	600
Donald Lorn McDougall, Esq	600
Hon. Sir John Rose	600
Charles Alexander, Esq	600
Forward	$19,200

Forward	$19,200
Moses E. David, Esq	600
Wm. Carter, Esq	600
Thomas Patton, Esq	600
Wm. Workman, Esq	600
Hon. Luther H. Holton	600
Henry Lyman, Esq	600
David Torrance, Esq	600
Edwin Atwater, Esq	600
Theodore Hart, Esq	600
Wm. Forsyth Grant, Esq	600
Robert Campbell, Esq	600
Alfred Savage, Esq	600
James Ferrier, jun., Esq	600
Wm. Stephen, Esq	600
N. S. Whitney, Esq	600
William Dow, Esq	600
William Watson, Esq	600
Edward and Alicia Major	600
Hon. Sir A. T. Galt	360
John R. Esdaile, Esq	200
Total	$30,560

1871.

John Frothingham, Esq	$5150
William Molson, Esq	5000
William C. Macdonald, Esq	5000
Thomas Workman, Esq	5000
J. H. R. Molson, Esq	2000
John McLennan, Esq	1000
B. Gibb, Esq	600
Messrs. A. & W. Robertson	600
Forward	$24,350

Forward	$24,350
T. W. Ritchie, Esq	300
Messrs. Sinclair, Jack & Co	250
John Reddy, M.D	100
Wm. Lunn, Esq	100
Hon. F. W. Torrance	60
Wm. Rose, Esq	50
Total	$25,210

1881-82.

Hugh McLennan, Esq	$5000
G. A. Drummond, Esq	4000
George Hague, Esq	3000
M. H. Gault, Esq	2000
Andrew Robertson, Esq	1000
Robertson Campbell, Esq	1000
Sir Jos. and Lady Hickson	1000
Mrs. Andrew Dow	1000
Alexander Murray, Esq	1000
Miss Orkney	1000
Hector McKenzie, Esq	1000
Forward	$21,000

Forward	$21,000
O. S. Wood, Esq	1000
J.B. Greenshields, Esq. (London)	1000
Warden King, Esq	1000
W. P. Cumming, Esq	1000
Mrs. Hew Ramsay	500
R. A. Ramsay, Esq	500
H. H. Wood, Esq	500
James Burnett, Esq	500
Charles Gibb, Esq	500
J. S. McLachlan, Esq	200
Total	$27,700

1883-84.

Edward Mackay, Esq $5,000

6. ENDOWMENT FUND FOR GENERAL PURPOSES.

1897.

Bequest of the late John H. R. Molson, Esq., $100,000.

7. SUBSCRIPTION FOR IMPROVEMENTS TO COLLEGE, 1856.

Hon. Charles Dewey Day ..... $200.

8. SUBSCRIPTION FOR CURRENT EXPENSES, 1881-82.

Principal Dawson					$1000
J. H. R. Molson	1000	per annum,	5	years, being	5000
George Stephen, Esq.	1000	"	"	"	5000
Hon. Donald A. Smith	1000	"	"	"	5000
David Morrice, Esq	200	"	"	"	1000
Messrs. Gault Brothers & Co.	200	"	"	"	1000
Messrs. S. H. & A. S. Ewing	200	"	"	"	1000
Hon. Robert MacKay	300	"	2	"	600
Jonathan Hodgson, Esq	100	"	5	"	500
Geo. M. Kinghorn, Esq	100	"	"	"	500
David J. Greenshields, Esq					300
Thomas Craig, Esq	100	"	2	"	200
John Rankin, Esq					200
John Duncan, Esq					200
George Brush, Esq., $25 for five years, being					125
Robert Benny, Esq					100
Miss E. A. Ramsay					100
Hugh Paton, Esq., $50 for two years, being					100
J. M. Douglas, Esq					50
James Court, Esq					50
Total					$22,025

1887-88.

John H. R. Molson, Esq	$1000	per annum,	3	years, being	$3000
Wm. C. Macdonald, Esq	1000	"	"	"	3000
Peter Redpath, Esq	1000	"	"	"	3000
Hon. Sir D. A. Smith, K.C.M.G.	1000	"	"	"	3000
Hon. James Ferrier	500	"	"	"	1500
Sir Joseph Hickson	500	"	"	"	1500
Hugh McLennan, Esq	250	"	"	"	750
E. B. Greenshields, Esq	250	"	"	"	750
George Hague, Esq	250	"	"	"	750
John Molson, Esq	250	"	"	"	750
Samuel Finley, Esq	250	"	"	"	750
Mrs. Mackay, $100 annually, 1889 to 1893					500
Total					$19,250

9. SUBSCRIPTION BY MEMBERS OF BOARD OF GOVERNORS, IN 1898-99.—$191,000.

10. SUBSCRIPTIONS FOR A BUILDING FOR THE CARPENTER COLLECTION OF SHELLS.

1868.

Peter Redpath, Esq.	$ 500
William Molson, Esq.	500
Harrison Stephens, Esq	100
Robert J. Reekie, Esq	100
John H. R. Molson, Esq	100
Sir Wm. E. Logan, F.R.S.	100
John Molson, Esq	100
Thos. Workman, Esq., M.P.	100
Forward	$ 1,600

Forward	$ 1,600
Geo. H. Frothingham, Esq.	100
Wm Dow, Esq	100
Thomas Rimmer, Esq	100
Andrew Robertson, Esq.	100
Mrs. Redpath	100
Benaiah Gibb, Esq.	50
Hon. John Rose	50
Total	$ 2,200

11. SUBSCRIPTIONS FOR THE ERECTION OF THE LODGE AND GATES.

William Molson, Esq	$ 100
John H. R. Molson, Esq.	100
William Workman, Esq	100
Joseph Tiffin, jun., Esq.	100
Thos. J. Claxton, Esq.	100
James Linton, Esq.	100
William McDougall, Esq.	100
Charles J. Brydges, Esq	100
George A. Drummond, Esq.	100
Thomas Rimmer, Esq.	100
William Dow, Esq	100
Total	$ 1,100

Forward	$ 1,100
John Frothingham, Esq.	100
James A. Mathewson, Esq.	100
Peter Redpath, Esq	100
G. H. Frothingham, Esq.	100
G. D. Ferrier, Esq.	100
John Smith, Esq.	100
Charles Alexander, Esq	100
J. Evans, Esq.	100
Henry Lyman, Esq.	50
Total	$ 1,950

12. LIBRARY AND MUSEUM.

Special Collections of Books presented to the Library.

1. The Peter Redpath Collection of Historical Books, presented by Peter Redpath, Esq., of Montreal, 3,500 Volumes, with subsequent additions.
2. The Robson Collection of works in Archæology and General Literature, presented by Dr. John Robson, of Warrington, England, 3,436 Volumes.
3. The Charles Alexander Collection of Classical Works, presented by C. Alexander, Esq., of Montreal, 221 Volumes.
4. Frederick Griffin, Esq., Q. C., Collection of Books, being the whole of his Library, bequeathed by his will, 2,695 Volumes.
5. The Hon Mr. Justice Mackay, Collection of Books, being the whole of his Library, 2,007 Volumes.
6. The "T. D. King Shakespeare Collection," presented by the Hon. Sir Donald A. Smith and W. C. Macdonald, Esq., of Montreal, being 214 Volumes.
7. The Ribbeck Library of Classical Literature, presented by Sir W. C. Macdonald, about 4,000 works.

Endowments for Library.

Wm. Molson, Esq., for Endowment of a Library Fund (1871)	$ 4,000
Hon. F. W. Torrance for Endowment of Mental, Moral and Political Philosophy Book Fund (1876)	1,000
Mrs. Redpath, for the Endowment of the Wm. Wood Redpath Memorial Fund (1881)	1,000
Forward	$ 6,000

Forward	$ 6,000
A friend, by the Hon. F. W. Torrance, for Endowment of a Library Fund (1882)	400
Hugh S McLennan, Library Endowment, a gift from Estate late Hugh S. McLennan to the Library of McGill College, the income to be applied to binding (1892)	250
Total	$ 6,650

Subscriptions, etc., to Library.

John Thorburn for purchase of Books	$ 90
Andrew Drummond, do., for Applied Science	25
The Graduates in Arts and Applied Science of 1885 for purchase of Books	31
do do of 1886	28
The late R. A. Ramsay, Esq., Bequest for purchase of books (1887)	1,000
Andrew Drummond, Esq., to Library Fund of Faculty of Applied Science	25
Hon. Sir Donald A. Smith, for purchase of books from the R. W. Boodle Library	200
Ottawa Valley Graduates' Society, for binding books in the University Library	25
Forward	$ 1,424

Forward	$ 1,424
Peter Redpath, Esq., in aid of the new catalogue of the Library (1892)	500
Mrs. Peter Redpath for maintenance of Library, $5,000 per annum since 1894	25,000
Hon. Sir Donald A. Smith, donation for the purchase of books for the Library, particularly in the French Department (1897)	250
John H. R. Molson, donation for purchase of books for the Library (1897)	195
Hon. Treas. Redpath Memorial Fund, London, England. The balance remaining over of the above fund to be used for purchase of books for the Library	47
Total	$27,416

Special Collections presented to the Museum.

1. The Holmes Herbarium, presented by the late Andrew F. Holmes, M.D.
2. The Carpenter Collection of Shells, presented by the late P. P. Carpenter, Ph.D.
3. The Collection of Casts of Ivory Carvings, issued by the Arundel Society, presented by Henry Chapman, Esq.
4. The McCulloch Collection of Birds and Mammals, coltedlec by the late Dr. M. McCulloch, of Montreal, and presented by his heirs.
5. The Logan Memorial Collections of Specimens in Geology and Natural History, presented by the heirs of the late Sir W. E. Logan, LL.D., F.R.S.
6. The Dawson Collection in Geology and Palæontology, being the Private Collections of Principal Dawson, presented by him to the Museum.
7. The Bowles Collection of Lepidoptera, presented by W. C. Macdonald, Esq., and J. H. Burland, Esq.
8. R. Morton Middleton, jr., London, Eng., Collection of Plants.
9. Collection of Butterflies, presented by the Members of the Board of Governors of the University.
10. Collection of Lepidoptera, presented by Sir W. C. Macdonald.

(See also "List of Donations to the Library and Museum," printed in the Annual Report of the University and Report of the Museum.)

Endowment for the Museum.

Wm. Molson, Esq., for the Endowment of a Museum Fund (1873) ..... $ 2,000

Subscriptions, etc., for the Museum.

T. J. Claxton, Esq., for purchase of Specimens for Museum	$ 250
Peter Redpath, Esq., for Museum expenses, $1,000 per annum from 1882 to 1893	12,000
Mrs. Peter Redpath, for Museum expenses, 1894 to 1897	7,000
Mrs. H. G. Frothingham for the arrangement of Dr. Carpener's Collection of Mazatlan shells	233
Peter Redpath, Esq., for improvements to Museum (1891)	1,000
Forward	$20,483
A Lady, for Museum expenses from 1882 to 1894	7,000
A Friend for the purchase of Specimens for the Museum	4,300
John H. R. Molson, for purchase of books on "Butterflies of Eastern U. S. and Canada"	50
Hon. Sir Donald A. Smith, for mounting skin and skeleton of Musk Ox	150
Total	$31,983

13. MISCELLANEOUS.

Chas. T. Blackman, Esq., of Montreal, the gift of a Telescope and Astronomical Instruments called after his name.	
J. J. Arnton bequest to McGill University (1895)	$ 900
R. A. Ramsay, M. A., B. C. L., to defray the expenses of re-erecting the tomb of the late Hon. James McGill (1877)	150

14. UNIVERSITY PORTRAITS AND BUSTS.

Portrait of the Founder, presented by the late Thomas Blackwood, Esq.

Portrait of William Molson, Esq., presented to the University.

Bust of William Molson, Esq., by Marshall Wood, presented by Graduates of the University.

Portrait of Peter Redpath, Esq., painted by Sydney Hodges, presented by Citizens of Montreal.

Portrait of Rev. Dr. Leach, by Wyatt Eaton, presented by Friends and Graduates of the University.

Portrait of Sir William Dawson, by Wyatt Eaton, presented by Friends and Graduates of the University.

Portrait of Hon. James Ferrier, by Robert Harris, presented by Friends and Graduates of the University.

Portrait of Peter McGill, presented (through Mr. A. T. Taylor), by Judge Parker, of Edinburgh.

Portrait of Dr. William Robertson, founder of the Medical Faculty, presented in loving remembrance by his family and descendants.

Bust of Peter Redpath, Esq., by Reynolds Stephens, presented by Mr. Redpath's personal friends in England.

Portrait of Peter Redpath. Esq., by Robert Harris, presented by Friends and Undergraduates of the University.

Portrait of Mrs. Peter Redpath, by Robert Harris, presented by the Governors of the University.

Portrait of John H. R. Molson, by Robert Harris, presented by the Governors of the University.

II. ENDOWMENTS AND SUBSCRIPTIONS FOR THE FACULTY OF ARTS.

1. BUILDINGS, CHAIRS, ETC.

Endowment Fund, 1856.

John Gordon McKenzie, Esq.,	$2.000
Ira Gould, Esq.,	2,300
Total,	$4,300

THE MOLSON CHAIR OF ENGLISH LANGUAGE AND LITERATURE, in 1856, endowed by the Honorable John Molson, Thomas Molson, Esq., and William Molson, Esq.—$20,000; and supplemented in 1892 by John H. R. Molson, Esq., with a further sum of $20,000. Total, $40,000.

THE PETER REDPATH CHAIR OF PURE MATHEMATICS (founded as Chair of Natural Philosophy), in 1871, endowed by Peter Redpath, Esq., $20,000.

THE LOGAN CHAIR OF GEOLOGY, in 1871, endowed by Sir W. E. Logan, LL.D., F.R.S., and Hart Logan, Esq.—$20,000.

THE JOHN FROTHINGHAM CHAIR OF MENTAL AND MORAL PHILOSOPHY, 1873, endowed by Miss Louisa Frothingham,—$20,000, and supplemented in 1891 with a further sum of $20,000. Total $40,000.

THE MAJOR HIRAM MILLS CHAIR OF CLASSICS, in 1882, endowed by the last will of the late Major Hiram Mills of Montreal,—$42,000.

THE DAVID J. GREENSHIELDS CHAIR OF CHEMISTRY AND MINERALOGY in the Faculties of Arts and Applied Science, in 1883, endowed by the last will of the late David J. Greenshields, Esq., of Montreal, with the sum of $40,000, half of which is devoted to the Faculty of Arts.

THE WILLIAM C. MACDONALD CHAIRS OF PHYSICS, in the Faculties of Arts and Applied Science, endowed by William C. Macdonald, Esq., in 1890,—$50,000; in 1893,—$50,000. Total, $100,000.

THE CHARLES GIBB BOTANICAL ENDOWMENT, subscriptions received to date:

A Friend,—	$8,000.
Mrs. Catherine Hill.—	200. Total, $8,200.

THE WILLIAM C. MACDONALD Physics Building and Equipment, in the Faculties of Arts and Applied Science. The gift of William C. Macdonald, Esq., announced by him as a gift to the University in 1890, and formally opened February, 1893.

THE W. C. MACDONALD PHYSICS BUILDING Maintenance Fund in the Faculties of Arts and Applied Science, endowed by W. C. Macdonald, Esq.,—$150,000.

THE KINGSFORD CHAIR OF HISTORY, endowed by Wm. C. Macdonald, Esq., in 1898, $50,000.

2. ENDOWMENT FOR PENSION FUND.

This endowment was given in 1894 to be invested and the revenue used exclusively for providing Pensions or Retiring Allowances for members of the teaching staff of the Faculties of Arts and Applied Science.

Hon. Sir Donald A. Smith	$50,000
John H. R. Molson	50,000
William C. Macdonald, Esq	50,000
Total	$150,000

3. EXHIBITIONS AND SCHOLARSHIPS, ETC.

THE JANE REDPATH EXHIBITION, in the Faculty of Arts,—founded in 1868, by Mrs. Redpath, of Terrace Bank, Montreal, and endowed with the sum of $1,667.

THE MACDONALD SCHOLARSHIPS AND EXHIBITIONS, 10 in number, in the Faculty of Arts—founded in 1871, and endowed in 1882 with the sum of $25,000 by William C. Macdonald, Esq.

THE CHARLES ALEXANDER SCHOLARSHIP, for Classics—founded in 1871 by Charles Alexander, Esq. Endowed in 1893 with the sum of $2,000.

THE BARBARA SCOTT SCHOLARSHIP FOR CLASSICAL LANGUAGE AND LITERATURE—founded in 1884 by the last will of the late Miss Barbara Scott, of Montreal, in the sum of $2,000.

THE GEORGE HAGUE EXHIBITION—founded in 1881—Annual value $125.

THE MAJOR HIRAM MILLS MEDAL AND SCHOLARSHIP—founded by the will of the late Major Hiram Mills, of Montreal, and endowed with the sum of $1,500.

T. M. THOMPSON, ESQ.—$250 for two Exhibitions in September, 1871 ; $200 for two Exhibitions in 1872,—$450.

REV. COLIN C. STUART—for the "Stuart Prize in Hebrew,"—$60.

THE TAYLOR SCHOLARSHIP—founded in 1871, by T. M. Taylor, Esq.—Annual value $100—terminated in 1878.

PROFESSOR ALEXANDER JOHNSON—for Scholarship for three Sessions, terminated 1886 87—$350.

HER MAJESTY'S COMMISSION for the Exhibition of 1851—Nomination Scholarships for 1891, 1893, 1895 and 1897, value £150 annually, tenable for two years.

THE PHILIP CARPENTER FELLOWSHIP—founded by Mrs. Philip Carpenter, for the Maintenance of a Post-Graduation Teaching Fellowship or Scholarship in Natural Science or some branch thereof in the Faculty of Arts in McGill College, endowed in 1892 with the sum of $7,000.

A Lady, to provide for three tuitions in the Faculty of Arts for sessions 1892-93 1893-94.

THE NEW YORK GRADUATE SOCIETY EXHIBITION—a gift of $60 annually since 1897, for an Exhibition in the Faculty of Arts to be associated with the name of Sir William Dawson.

To provide Bursaries in the Faculty of Arts, 1898, subscriptions from

W. W. Ogilvie	$1,000
Hugh McLennan	120
D. Macmaster	120

4. ENDOWMENTS AND DONATIONS OF MEDALS AND PRIZES

In 1856 Henry Chapman, Esq., founded a gold medal, to be named the "Henry Chapman Gold Medal," to be given annually in the graduating class in Arts. This medal was endowed by Mr. Chapman in 1874 with the sum of $700.

In 1860 the sum of £200, presented to the College by H. R. H. the Prince of Wales, was applied to the foundation of a Gold Medal, to be called the "Prince of Wales Gold Medal," which is given in the graduating class for Honour Studies in Mental and Moral Philosophy.

In 1864 the "Anne Molson Gold Medal" was founded and endowed by Mrs. John Molson, of Belmont Hall, Montreal, for an Honour Course in Mathematics and Physics.

In the same year the "Shakespeare Gold Medal," for an Honour Course, to comprise and include the works of Shakespeare and the Literature of England from his time to the time of Addison, both inclusive, and such other accessory subjects as the Corporation may from time to time appoint, was founded and endowed by citizens of Montreal, on occasion of the three hundredth anniversary of the birth of Shakespeare.

In the same year the "Logan Gold Medal" for an Honour Course in Geology and Natural Science was founded and endowed by Sir William Logan, LL.D., F.R.S., F.G.S., etc.

In 1874 a Gold and a Silver Medal were given by His Excellency the Earl of Dufferin, Governor-General of Canada, for competition in the Faculty of Arts, and continued till 1878.

In 1875 the "Neil Stuart prize in Hebrew" was endowed by Neil Stuart, Esq., of Vankleek Hill, in the sum of $340.

In 1880 a Gold and a Silver Medal were given by His Excellency the Marquis of Lorne, Governor-General of Canada, the former for competition in the Faculty of Arts, the latter for competition in the Faculty of Applied Science ; continued till 1883.

In 1884 a Gold and a Silver Medal were given by His Excellency the Marquis of Lansdowne, Governor-General of Canada, the former for competition in the Faculty of Arts, the latter for competition in the Faculty of Applied Science. Continued till 1888.

In 1889 a Gold and a Silver Medal were given by His Excellency Lord Stanley, Governor-General of Canada, the former for competition in the Faculty of Arts, the latter for competition in the Faculty of Applied Science. Continued till 1893.

THE "CHARLES G. COSTER MEMORIAL PRIZE" for general proficiency—given annually by Colin H. Livingstone, Esq., B.A.; founded in 1889.

In 1894 a Gold and a Silver Medal were given by His Excellency the Earl of Aberdeen, Governor-General of Canada, the former for competition in the Faculty of Arts, the latter for competition in the Faculty of Applied Science. Continued till 1898.

In 1899 a Gold and a Silver Medal were given by His Excellency the Earl of Minto, Governor-General of Canada, the former for competition in the Faculty of Arts, the latter for competition in the Faculty of Applied Science.

5. SUBSCRIPTIONS FOR THE SUPPORT OF THE CHAIR OF BOTANY, 1883-84.

Principal Dawson	$500	per annum,	for 5	years,	being...	$2,500
Hon. Sir D. A. Smith	250	"	"	"	.....	1,250
J. H. R. Molson, Esq.	100	"	"	"	.....	500
Mrs. J. H. R. Molson	100	"	"	"	.....	500
G. Hague, Esq	100	"	"	"	.....	500
Mrs. Redpath	100	"	"	"	.....	500
Hugh McKay, Esq	100	"	"	"	.....	500
Robert Moat, Esq	100	"	"	"	.....	500
Wm. C. Macdonald, Esq	100	"	"	"	.....	500
Charles Gibb, Esq	50	"	"	"	.....	250
Miss Orkney	50	"	"	"	.....	250
Robert Mackay, Esq	50	"	"	"	.....	250
Mrs. Wm. Molson	50	"	"	"	.....	250
Mrs. John Molson	50	"	"	"	.....	250
John Stirling, Esq	50	"	"	"	.....	250
Warden King, Esq	50	"	"	"	.....	250
Miss Hall	50	"	"	"	.....	250
Robert Angus, Esq	50	"	"	"	.....	250
D. A. P. Watt, Esq	50	"	"	"	.....	250
Hugh McLennan, Esq	25	"	"	"	.....	125
Sir Joseph Hickson	10	"	"	"	.....	50
Mrs. Phillips	.....	.....	.....	.....	.....	20
						$9,945

6. BOTANIC GARDEN, ETC.

Subscriptions, 1890-91.

Hugh McLennan, Esq	$100	Forward	$900
Gilman Cheney, Esq	100	Jonathan Hodgson, Esq.	100
James Johnston, Esq	100	Robert Mackay, Esq	100
James Slessor, Esq	100	H. Shorey, Esq	50
A friend	100	J. S. Shearer, Esq	50
Hugh Graham, Esq	100	Geo. Sumner, Esq	25
A. F. Gault, Esq	100	A. Ramsay & Co	25
W. T. Costigan, Esq	100	Garth & Co	25
Jonathan Brown, Esq	100		
Forward	$900	Total	$1,275

To Erect Plant House in Botanic Garden.

Hon. Sir Donald A. Smith	$362 00
John H. R. Molson, Esq	361 51
William C. Macdonald, Esq	361 02
Total	$ 1,084 53

7. SUBSCRIPTIONS IN AID OF THE CHAIR OF HEBREW.

Warden King, Esq	in 1889	$50 per annum, 3 years being	$150
Principal Sir William Dawson	"	50 " " "	150
Hon. Hugh Mackay	"	50 " " "	150
A. F. Gault, Esq.	"	25 " " "	75
Geo. Hague, Esq	"	25 " " "	75
T. A. Dawes, Esq	"	25 " " "	75
S. Carsley, Esq	"	25 " " "	75
S. Davis, Esq	in 1892		20
Warden King, Esq	"	50 per annum for 3 years	150
A. F. Gault, Esq	"	50 " " "	150
Robert Mackay, Esq	"	50 " " "	150
Hugh McLennan, Esq	"	25 " " "	75
George Hague, Esq.	"	25 " " "	75
T. A. Dawes, Esq	"	25 " " "	75
S. Carsley, Esq	"		25
J. Murphy, Esq	"		25
Total			$1,495

8. SUBSCRIPTIONS TO PROVIDE SESSIONAL LECTURERS, ETC.

Hon. Sir Donald A. Smith, sessions 1891-92 to 1897-98	$27,500
Mrs. John H. R. Molson, sessions 1891-92 to 1898-99	7,300
W. C. Macdonald, Esq., to provide for certain salaries in the Department of Physics, etc., sessions 1894-95 and 1895-96	2,627
Total	$37,427

9. ENDOWMENTS FOR APPARATUS.

The Local Committee of the British Association for the Advancement of Science to found the British Association Apparatus Fund in the Faculties of Arts and Applied Science, in commemoration of the meeting of the Association in Montreal in 1884 ..... $1,500

10. SUBSCRIPTIONS, ETC., FOR APPARATUS.

Philosophical Apparatus, 1867.	
William Molson, Esq	$500
John H. R. Molson, Esq	500
Peter Redpath, Esq	500
George Moffatt, Esq	250
Andrew Robertson, Esq	100
John Frothingham, Esq	100
David Torrance, Esq	100
Thos. J. Barron, B A	50
J. H. R. Molson, Esq., Dynamo, Gas Engine and Fixtures	1,792
Mrs. Redpath, Storage battery	400
Forward	$4,292

Forward	$4,292
Wm. C. Macdonald, Esq., fittings of Upper Chemical Laboratory	2,075
A. J. Lawson, a Dynamo	
Benjamin Dawson, 3 Microscopes	
Botanical Apparatus, 1897.	
Wm. C. Macdonald, Esq	420
Hugh McLennan, Esq	111
Samuel Finley, Esq	111
A. F. Gault, Esq	111
Total	$ 7,120

11. MISCELLANEOUS.

Hugh McLennan, Esq., subscription toward expense of table at the Biological Station, Wood's Holl, Mass., for McGill Professor of Botany (1896) $250

III. SPECIAL COURSE FOR WOMEN IN THE FACULTY OF ARTS.

1. THE DONALDA ENDOWMENT FOR THE HIGHER EDUCATION OF WOMEN.

This endowment, given by the Honourable Sir Donald A. Smith of Montreal, is to provide for the education of women in the subjects of the Faculty of Arts, up to the standard of the examination for B.A., in classes wholly separate, to constitute a separate Special Course or College for Women, in 1884, $50,000 and in 1886—$70,000..... .....Total. $120,000

2 MISCELLANEOUS SUBSCRIPTIONS.

Hon. Sir Donald A. Smith, for musical instruction in sessions 1889-90 and 1890-91..... .....$400

Hon. Sir Donald A. Smith, for appliances in Zoology in the special interest of Donalda classes in 1895..... .....$100

3. ENDOWMENT HELD IN TRUST BY THE BOARD OF ROYAL INSTITUTION.

The "Hannah Willard Lyman Memorial Fund," contributed by subscriptions of former pupils of Miss Lyman, and invested as a permanent endowment to furnish annually a Scholarship or Prizes in a "College for Women" affiliated to the University, or in classes for the Higher Education of Women, approved by the University. The amount of the fund is at present $1,100.

IV. ENDOWMENTS AND SUBSCRIPTIONS FOR THE FACULTY OF APPLIED SCIENCE.

1. BUILDINGS, CHAIRS, ETC.

THE WILLIAM SCOTT CHAIR OF CIVIL ENGINEERING, in 1884, endowed by the last will of the late Miss Barbara Scott, of Montreal.—$30,000.

THE DAVID J. GREENSHIELDS CHAIR OF CHEMISTRY AND MINERALOGY, in the Faculties of Arts and Applied Science, in 1883, endowed by the last will of the late David J. Greenshields, Esq., of Montreal, with the sum of $40,000, half of which is devoted to the Faculty of Applied Science.

THE THOMAS WORKMAN DEPARTMENT OF MECHANICAL ENGINEERING—founded in 1891 under the last will of the late Thomas Workman, Esq., who bequeathed the sum of $117,000—$60,000 for the maintenance of a Chair of Mechanical Engineering, with the assistance, shops, machinery and apparatus necessary thereto, $57,000 to be expended in provision of necessary buildings, machinery and apparatus.

WILLIAM MACDONALD, ESQ., in 1890, towards erection of Thomas Workman Workshops, $20,000.

THE MACDONALD ENGINEERING BUILDING AND EQUIPMENT—announced by the donor as a gift to the University in 1890, and formally opened February, 1893.

THE MACDONALD PHYSICS BUILDING AND EQUIPMENT in the Faculties of Arts and Applied Science, the gift of William C. Macdonald, Esq., announced by him as a gift to the University in 1890, and formally opened February, 1893.

THE WILLIAM C. MACDONALD CHAIRS OF PHYSICS, in the Faculties of Arts and Applied Science, endowed by William C. Macdonald, Esq., in 1890—$50,000, in 1893, $50,000. Total, $100,000.

THE WILLIAM C. MACDONALD CHAIR OF ELECTRICAL ENGINEERING, endowed by Wm. C. Macdonald, Esq., in 1891, with the sum of $40,000; in 1898, with the additional sum of $10,000.

THE MACDONALD ENGINEERING BUILDING MAINTENANCE FUND, endowed by Wm. C. Macdonald, Esq., in 1892 and 1896.—$85,000.

THE MACDONALD PHYSICS BUILDING MAINTENANCE FUND in the Faculties of Arts and Applied Science, endowed by Wm. C. Macdonald, Esq., in 1892 and 1896—$150,000.

THE MACDONALD CHEMISTRY AND MINING BUILDING AND EQUIPMENT, given to the University by Wm. C. Macdonald, Esq., in 1896.—$246,000.

THE MACDONALD CHEMISTRY AND MINING BUILDING MAINTENANCE FUND, endowed by William C. Macdonald, Esq., $225,000.

THE WILLIAM C. MACDONALD CHAIR OF MINING AND METALLURGY, endowed in 1896 by William C. Macdonald, Esq., with the sum of $50,000.

THE WILLIAM C. MACDONALD CHAIR OF ARCHITECTURE, endowed in 1896 by Wm. C. Macdonald, Esq., with the sum of $50,000.

THE WILLIAM C. MACDONALD CHAIR OF CHEMISTRY, endowed in 1897 by William C. Macdonald, Esq., with the sum of $50,000.

THE WILLIAM C. MACDONALD ARCHITECTURAL DEPARTMENT MAINTENANCE FUND, endowed by William C. Macdonald, Esq., in 1898.—$10,000.

THE SIR WILLIAM C. MACDONALD ENDOWMENT DEPARTMENT OF MINING AND METALLURGY, 1899.—$55,000.

2. ENDOWMENT FOR PENSION FUND.

This endowment was given in 1894 to be invested and the revenue used exclusively for providing Pensions or Retiring Allowances for members of the teaching staff of the Faculties of Arts and Applied Science:

Hon. Sir Donald A. Smith,	$50,000
John H. R. Molson, Esq.,	50,000
Wm. C. Macdonald, Esq.	50,000
Total	$150,000

3. EXHIBITIONS AND SCHOLARSHIPS.

THE SCOTT EXHIBITION.—Founded by the Caledonian Society of Montreal, in commemoration of the Centenary of Sir Walter Scott, and endowed in 1872 with the sum of $1,100 subscribed by members of the Society and other citizens of Montreal. The Exhibition is given annually in the Faculty of Applied Science—Annual value $50.

THE BURLAND SCHOLARSHIP, founded 1882 by J. H. Burland, B.A.Sc., $100 for a Scholarship in Applied Science for three years, being $300.

HER MAJESTYS' COMMISSION for the Exhibition of 1851—Nomination Scholarships for 1891, 1893, 1895 and 1897, value £150 annually, each tenable for two years.

THE DR. T. STERRY HUNT SCHOLARSHIP.—Founded in 1894 by the will of the late Dr. T. Sterry Hunt, and endowed with the sum of $2,082, the income to be given and paid annually to a student or students of Chemistry.

4. MEDALS AND PRIZES.

In 1880 a Gold and a Silver Medal were given by His Excellency the Marquis of Lorne, Governor-General of Canada, the former for competition in the Faculty of Arts, the latter for competition in the Faculty of Applied Science. Continued till 1883.

In 1884 a Gold and a Silver Medal were given by His Excellency the Marquis of Lansdowne, Governor-General of Canada, the former for competition in the Faculty of Arts, the latter for competition in the Faculty of Applied Science. Continued till 1888.

In 1885 the British Association Gold Medal for competition in the Graduating class in the Faculty of Applied Science, was founded by subscription of members of the British Association for the Advancement of Science, and by gift of the Council of the Association, in commemoration of its meeting in Montreal in the year 1884.

In 1889 a Gold and a Silver Medal were given by His Excellency Lord Stanley, Governor-General of Canada, the former for competition in the Faculty of Arts, the latter for competition in the Faculty of Applied Science. Continued till 1893.

In 1894 a Gold and a Silver Medal were given by His Excellency the Earl of Aberdeen, Governor-General of Canada, the former for competition in the Faculty of Arts, the latter for competition in the Faculty of Applied Science. Continued till 1898.

In 1899 a Gold and a Silver Medal were given by His Excellency the Earl of Minto, Governor-General of Canada, the former for competition in the Faculty of Arts, the latter for competition in the Faculty of Applied Science.

5. ENDOWMENTS AND SUBSCRIPTIONS FOR MAINTENANCE OF FACULTY.

Endowment Fund.

Daniel Torrance, Esq	$5,000
Charles J. Brydges, Esq	1,000
R. J. Reekie, Esq	100
Total	$6,100

Graduates' Endowment Fund.

Graduates' Endowment Fund—Class 1890, $70 a year for 5 years, $350; received to date..	$85

Annual Subscriptions, 1871-1879.

Hon. James Ferrier ($100 per annum for 10 years)	$1,000
Peter Redpath, Esq. ($400 per annum for 10 years)	4,000
John H. R. Molson, Esq. ($400 per annum for 10 years)	4,000
George H. Frothingham, Esq. ($400 per annum for 7 years)...	2,800
T. James Claxton, Esq. ($100 per annum for 6 years)	600
Donald Ross, Esq. ($50 per annum for 5 years)	250
Miss Mary Frothingham ($400 per annum for 3 years)	1,200
Forward	$13,850

Forward	$13,850
H. McLennan, Esq. ($100 per annum for 5 years)	500
A. F. Gault, Esq. ($100 per annum for 5 years)	500
Gilbert Scott, Esq. ($100 for 2 years)	200
Joseph Hickson, Esq. ($100 for 2 years	200
Principal Dawson ($300 for 2 years)	600
His Excellency the Marquis of Lorne	500
Mrs. Redpath (Terrace Bank)...	100
Total	$16,450

Subscriptions towards Maintenance of Engineering Department.

Wm. C. Macdonald, Esq.,	sessions 1891-92 to 1897-98	$56,341
do	for advertising	675
do	to cover certain salaries, session 1894-95 and 1897-98..	1,920
do	to meet the expenses of the course of summer work for Mining Engineering Students (1898).	825
Total		$59,761

Subscriptions to provide lectures in Mechanical and Sanitary Engineering.

E. B. Greenshields, Esq.	$50
J. E. Bovey, Esq	50
Professor H. T. Bovey	61
Total	$161

Forward	$161
Jeffrey H. Burland, B.A Sc., $100 for 2 years	200
Smaller amounts	40
Total	$401

Subscriptions for Maintenance of Chair of Practical Chemistry, 1862.

Hon. C. Dunkin, M.P	$1,200
Principal Dawson	1,200
Peter Redpath, Esq	226
Total	$2,626

For Maintenance of Chair of Mining Engineering and Metallurgy, 1891.

R. B. Angus, Esq	$2000	
Mrs. Dow	1000	
Hugh McLennan, Esq	1000	
Miss Benny	1000	
T. A. Dawes, Esq	750	
A. A. Ayer, Esq	250	
G. W. Reid, Esq	100	
Evans Bros	100	
		$6,200
Payable in Three Years.		
Sir Wm. Dawson	1000	
Alex. Stuart, Esq. (London, Eng)	1500	
R. G. Reid, Esq	1500	
Forward	$4,000	$6,200
Forward	$4,000	$6,200
E. K. Greene, Esq	750	
Dr. T. Brainerd	750	
A. F. Gault, Esq	750	
Messrs. H. & A. Allan	750	
Hector Mackenzie, Esq	750	
Peter Lyall, Esq	750	
James Ross, Esq	600	
A. Robertson, Esq	300	
John Duncan, Esq	300	
George Hague, Esq	300	
Jonathan Hodgson, Esq	300	
James Moore, Esq	200	
Messrs. Ames & Holden	150	
James Cooper, Esq	150	
		10,800
Total		$17,000

Remodelling East Wing for Class Rooms for Faculty of Applied Science, 1888.

John H. R. Molson, Esq	$3000	Total	$6000
Wm. C. Macdonald, Esq	3000		

6. ENDOWMENTS FOR APPARATUS.

The Local Committee of the British Association for the Advancement of Science, to found the British Association Apparatus Fund in the Faculties of Arts and Applied Science, in commemoration of the meeting of the Association in Montreal in 1884 $1,500

7. SUBSCRIPTIONS, ETC., FOR APPARATUS.

A lady, for the purchase of Mining Models	$1000	Forward	$1175
Thos. McDougall, Esq., for the same	25	for the purchase of Appliances for the department of Civil Engineering in Faculty of Applied Science	475
J. Livesey, Esq., through Dr. Harrington, for the same	50	Capt. Adams, Chemical Apparatus	10
Geo. Stephen, Esq., for the same	50	J. H. Burland, B.A.Sc., Chemical Apparatus	25
Chas. Gibb, B.A., donation for Apparatus in Applied Science	50	Wm. C. Macdonald, Esq., for Surveying and Geodetic Apparatus in 1890	1500
The Local Committee for the reception (1881) of American Society of Civil Engineers		Total	$3,185
Forward	$1175		

8. LIST OF SUBSCRIBERS AND DONORS TO THE EQUIPMENT OF THE NEW ENGINEERING BUILDINGS OF McGILL UNIVERSITY TO MAY, 1898.

Abbott, W. ..... Equipment
Adams, Capt. R. C. Mining Photographs
American Steam Gauge Co., (Boston) Indicator.
Archbald, H. ..... Books
Ashton Valve Co. (Boston) Sectional Valve
Bell Telephone Co ..... A set of Telephone Apparatus
Bertram & Sons, J. (Dundas). ..... 24 in. Planer
Birch & Co., J. (England) ..... Hydraulic Tubes
Birks, Henry ..... Clock
Bishop, George ..... Equipment
Blackwe l, Kennet ..... Equipment
Blake Mnfg. Co., The George F ..... Blue Prints of Pump
Blake Pump Co., The Geo. (New York & Boston) ..... Pump
Bremner, A $50
Brockhaus, Herr F. A ..... Books
Brodie & Harvey $50
Brush, G ..... Boiler
Cameron, General ..... Rotary Drill
Campbell Tile Co. (England), per Jordan & Locker..... Equipment
Campbell, Kenneth $50
Canadian General Electric Co..... (Toronto), per F. Nichols..Equipment
Canadian General Electric Co ..... Electric Drill, Edison Generator, Dynamo, Motor
Carsley, S..... $100
Carus-Wilson, Prof. C. A. ..Equipment
Cary, A. A .....Photographs of Boilers
Chadwick, F..... .....Truss Models
Chanteloup, ... $50
Claxton, T. J... Timber Beams of large Scantling for Testing Laboratory
Costigan, J..... Equipment
Cowen, Amos ..... Samples of Bricks
Cowper, P. H..... Model of Steam Engine
Craig, Messrs. J. & M., (Kilmarnock, Scotland) .....Sanitary Sections (full size) and models
Crocker-Wheeler Electric Motor Co., The (New York)... ..Motor, Armature, Prints
Crosby Steam Gauge and Valve Co., The (Boston).....Gauge and Valve, Indicator and Valves
Darling, Brown & Sharpe (Providence, R. I.)..... 6 in. Rule
Date, John..... Equipment
Dawson, W. B ..... Specimens
Dominion Wire Manfg. Co., per F. Fairman..... Shaper
Drummond, Hon. G. A ..... Prism
Drysdale, D..... Tools
Drysdale, W..... Tools
Earle, S. R ..... Air Injector
Edison General Electric Co.....Two 450 light dynamos, Brake Shoe and Disc.
Egleston, Dr. (New York).....Framed Photograph of the Moon, Books, Photos, etc.
Electric Welding Company, (Boston) Equipment
"Engineering Magazine" (New York City)..... Mining Illustrations and Photographs
Eureka Tempered Copper Co ..... Equipment
Ewan, A $100
Felton & Gilleaume..... Samples of Cable Wire, etc.
Forsyth, R..... Equipment
Frothingham & Workman ..... Tools
Furlong, G. W., B.A.Sc..... Specimens of Pine and Wood bored by Teredos.
Gardner & Son, R. W.....16 in. Lathe
Gardner, R..... Equipment
Garth & Co..... $500
Garth, Henry ..... Equipment
Government of New South Wales ..... Collection of Australian Timbers
Government of Queensland, Australia, Collection of Queensland Timbers
Gower, W. E.....
Graham, H $100
Grier, G. A..... Equipment
Gurney & Co., E. & C..... $604
Hadfield, Messrs. (Sheffield)..Equipment
Hamilton Bridge Works Co. ..... A Model of the Stoney Creek Arch
Hamilton Powder Co... .....Electrical Blasting Machine, and appliances, etc., for blasting.
Hearn & Harrison, per L. Harrison, Barometer & Clock
Hersey, R..... $1200
Hodgson, Jonathan $200
Holden, A ..... Equipment
Hosoki, Dr., of Tokio, Japan..... Collection of Japanese Wood
Hughes & Stephenson.....Equipment
Hutton, W. H..... Equipment
Ingersoll Rock Drill Co.....Rock Drill
Irwin & Hopper .....Equipment
Ives, H. R..... .....Cupola
Joyce, Alfred..... $50

Jordan & Locker .... Equipment
Kennedy, John ..... Equipment
Kennedy, W. & Sons..American Turbine
Kennedy, W. (Owen Sound) .....Pump
Kerr, R. & W .... Tools
King & Son, Warden..... ..... $534
Laughlin-Hough Drawing Table Co., Drawing Tables
Lachine Rapids Co.....Electrical
Laurie & Bro. J.....Compound Engine
Lawson, A. J .... Equipment
Lehigh Zinc & Iron Co .....Franklin Furnace, N. J., Mining Specimens & Photographs
Lindsay & Co., C. F.....Equipment
Lovell & Son, John..... .....Books
Lyster, A. G..... ..... Drawings and Sketches of London and Liverpool Docks
Macpherson, A ....Tools
Mason, Dr ....Equipment
Maxwell & Co., E. J ..... Equipment
McCarthy, D. & J. (Sorel) $300
McDougall, Mrs. J $4000
McLachlin Bros. (Arnprior) .....Timber
McLaren, D..... ....$100
McLaughlin Bros.....Timber
McNally & Co., W..... ..... $100
McPherson Sand Box Co. (Troy, N.Y.) Model of Sand Box
Miller Bros. & Sons..... .....Elevator
Mitchell, P..... .....Equipment ($300)
Mitchell & Co., R ....Equipment
Naismith, P. L., B.A.Sc..... Specimens
Nalder Bros. & Co. (England)..... . . Standard Cell
National Electric Mfg. Co..... . .... 100 volt Transformer, Transformers
Nicholson, Peter $100
Norton, A. O., Boston, Mass..... Two Norton Bull-bearing Lifting-jacks
Norton Emery Wheel Co. (Worcester, U.S.)..... ....Equipment
Notman, Wm ....Photographs
Ohio Brass Co..... .....Fittings
Ogilvie, W $500
Packing Elec. Co... .....Transformer
Palmer, A..... .....Equipment
Parker, M..... .... Equipment
Paton, H..... ....Equipment
Peckham Motor Truck and Wheel Co. (Kingston, N.Y.) .... Model of Motor Truck
Pelton Water Wheel Co. (New York) Two Motors
Pennsylvania Railroad Co.....Working Drawings of Locomotives (32)
Phelps Engine Co., per A. R. Williams & Co., Dake Steam Engine, 4 Horse Power Engine
Pillow, J. A..... ....$250
Pratt & Whitney (Hartford, Conn)..... Epicycloidal Gear Model
Prowse, G. R .... Equipment
Queensland Government per Sir Thomas McIlwraith..... Collection of Timbers
Radiator Co. (Toronto) $500
Ramsay & Son, A..... .....$100
Rathbun, E. W .....Samples of Fire-proof Construction $112
Reddaway & Co , F... Belt (value $50)
Redpath, F. R ....Equipment
Redpath, Mrs $100
Reed. G. W..... .... $100
Reford. R..... ..... $1000
Reid, R .... Equipment
Reid, R. G $1000
Renouf, E. M ....Books
Rhode Island Locomotive Works ..... Photos of Locomotives
Rife's Hydraulic Engine Mfg. Co. (Roanoke, Va., U.S.A.) .... Hydraulic Ram
Robb & Armstrong .... 80 H. P. High Speed Engine
Robertson, J..... .....Equipment
Rogers, Professor (Waterville, Maine) Equipment
Ross, Jas.... ....$500
Rodden, W..... .....Equipment
Royal Electric Co.....h..... ..... Motors 12 Arc Light Dynamos, 30 Light Stanley transformer
Rutherford, W..... ....Equipment
Sadler, G. (Robin & Sadler) .... Belting ($400)
Seeley, John..... ..... Insulators
Schaeffer & Budenbery (Brooklyn, N.Y.) Double Indicator
Scholes, F..... ....$100
Scovill Mfg. Co .....Equipment
Sharp, Stewart & Co. (Manchester, Eng) ....Equipment
Shearer, James..... .... $200
Sheppard, Chas..... .... $200
Siemens Bros. (London, Eng).. .... Cable Samples
Smith, C. B .... Framed Photos of Bridges (2)
Smith, R ....Equipment
Spence, J. P., C.E..... .....Specifications and Drawings showing construction of Sault Ste. Marie Canal Locks
Smith, R. Guilford ....Books
Stanley Elect. Co ....Wattmeter
Steel Co. of Scotland, The..... ..... Samples of Cable Wire, etc.
St. George, P. W..... .....Models
Stirling Co., The..... .... Sectional Blue Prints of Boilers

Sturtevant Co., The B. F. (Boston) ..... Blowers
Swan Lamp Mfg. Co..... ....Lamps
Taylor, A. T..... .... $300
Tees & Co..... ....Equipment
Thomas, R. & Son. ....Insulators
Thomson-Houston Co. (Boston)..... Incandescent dynamos
Twyford & Co..... .....Equipment
Vail, Stephen..... .....Piece of first Telegraph Wire Used
Walker & Co., James ....Tools
Wanklyn, F. L..... .....Equipment
Ward, Hon. J. K..... .... $50
Warrington Wire Co... .Cable Samples
Weston Elect. Instr. Co. Ammeters, &c.
Whittier Machine Co. (Boston) .... Electric Elevator
Wiley & Sons, John (New York)..Books
Yale & Towne Mfg. Co. (Stamford, Conn) .... Equipment
Yates & Thom .... Blue Prints of Machinery

The above representing a total of about $80,000.

9. FACULTY OF APPLIED SCIENCE LIBRARY ENDOWMENT, 1893.

Hugh Paton.....	$ 25	Forward	$ 600
A. Joyce.....	25	W. Rodden	25
R. Gardner.....	50	M. Parker.....	25
H. Garth.....	100	Robin & Sadler.....	50
Hughes & Stephenson.....	100	J. Robertson, Esq	50
R. Mitchell	300	Mrs. John McDougall (1895).....	20
Forward.....	$600	Total.....	$ 770

V. ENDOWMENTS AND SUBSCRIPTIONS IN AID OF THE FACULTY OF MEDICINE.

1. LEANCHOIL ENDOWMENT, 1884.

Hon. Sir Donald A. Smith, G.C.M.G..... ....$50,000

2. CAMPBELL MEMORIAL ENDOWMENT, 1884.

Established to commemorate the service rendered to the Faculty during 40 years by the late Dean, George W. Campbell, M.D., LL.D.

Mrs. G. W. Campbell	$ 2000	Forward	$20,000
H. A. Allan, Esq	1500	J. C. Wilson, Esq	1000
Hon. Sir D. A. Smith.....	1500	Mrs. John Redpath.....	1000
Sir George Stephen, Bart	1000	Hon. John Hamilton	1000
R. B. Angus, Esq	1000	Miss Orkney.....	1000
George A. Drummond, Esq.....	1000	Hugh Mackay, Esq	1000
Alex. Murray, Esq.....	1000	Hector Mackenzie, Esq.	1000
Robert Moat, Esq.....	1000	Thomas Workman, Esq.....	1000
W. C. Macdonald, Esq	1000	Hugh McLennan, Esq..... ...	1000
A Friend.....	1000	O. S. Wood, Esq.....	1000
Duncan McIntyre, Esq	1000	Frank Buller, M.D.....	500
A. F. Gault, Esq.....	1000	James Burnett, Esq	500
M. H. Gault, Esq	1000	Andrew Robertson, Esq.....	500
G. W. Stephens, Esq.....	1000	Robert Mackay, Esq.....	500
James Benning, Esq	1000	John Hope, Esq	500
R. P. Howard, M.D	1000	Alex. Urquhart, Esq.....	500
G. B. & J. H. Burland, Esqs	1000	R. A. Smith, Esq	500
Miss Elizabeth C. Benny.....	1000	George Hague, Esq.....	500
Forward..... .....$20,000		Forward	$33,000

Forward	$33,000
J. K. Ward, Esq.	500
Warden King, Esq.	500
John Stirling, Esq.	500
John Rankin, Esq.	500
Robert Reford, Esq.	500
Messrs. Cantlie, Ewan & Co	500
Messrs. J & W. Ogilvie	500
Randolph Hersey, Esq.	500
John A. Pillow, Esq.	500
S. Carsley, Esq.	500
D. C. MacCallum, M.D.	500
Messrs. S. Greenshields, Son & Co.	500
Jonathan Hodgson, Esq	500
George Ross, M.D.	500
T. G. Roddick, M.D.	500
Wm. Gardner, M.D	500
Messrs. Cochrane, Cassils & Co.	500
Sir Joseph Hickson	500
Allan Gilmour, Esq., Ottawa	500
R. W. Shepherd, Esq.	500
G. E. Fenwick, M.D.	300
Miles Williams, Esq.	300
G. P. Girdwood, M.D.	250
Charles F. Smithers, Esq.	250
John Kerry, Esq.	250
A. Baumgarten, Esq.	250
R. W. Elmenhorst, Esq.	250
W. F. Lewis, Esq.	250
George Armstrong, Esq	250
J. M. Douglas, Esq.	250
Messrs. H. Lyman, Sons & Co.	250
F. J. Shepherd, M.D.	250
Duncan McEachran, Esq., F. R. C. V. S.	200
Benj. Dawson, Esq.	200
R. Wolff, Esq.	150
James Stuart, M.D.	150
A. T. Paterson, Esq.	100
H. W. Thornton, M.D. (New Richmond, Q.)	100
C. B. Harvey, M.D. (Yale, B.C.)	100
D. Cluness, M.D. (Nanaimo, B.C.)	100
W. Kinlock, Esq.	100
Hua, Richardson & Co.	100
Mrs. Cuthbert (N. Richmond, Q.).	100
J. M. Drake, M.D.	100
Forward	$47,600
Hugh Patton, Esq.	100
R. T. Godfrey, M.D.	100
T. A. Rodger, M.D.	100
W. A. Dyer, Esq.	100
Geo. W. Wood, M.D. (Faribault, Minn.)	100
A. A. Browne, M.D.	100
Geo. Wilkins, M.D	100
R. L. MacDonnell, M.D	100
Jos. Workman, M.D. (Toronto)	50
Henry Lunam, B.A., M.D. (Campbellton, N.B.)	50
Hon. Sir A. T. Galt	50
T. J. Alloway, M.D.	30
R. J. B. Howard, M.D.	25
Louis T. Marceau, M.D. (Napierville, Q.)	25
Griffith Evans, M.D. (Vet. Dept. Army)	26
J. J. Farley, M.D. (Belleville)	25
Henry R. Gray, Esq.	25
J. E. Brouse, M.D. (Prescott)	20
R. N Rinfret (Quebec)	20
Robert Howard, M.D. (St. Johns)	20
Drs. J. & D. J. McIntosh (Vankleek Hill)	20
J. H. McBean, M.D	15
J. C. Rattray, M.D. (Cobden, O.)	10
E. H. Howard, M.D. (Lachine)	10
J. W. Oliver, M.D. (Clifton, O.)	10
D. A. McDougall, M.D. (Ottawa, O.)	10
A. Poussette, M.D. (Sarnia, O.)	10
A. Ruttan, M.D. (Napanee, O.)	10
James Gunn, M.D. (Durham, O.)	10
J. McDiarmid, M.D. (Hensall, O.)	5
W. J. Derby, M.D. (Rockland, O.)	5
J. Gillies, M.D. (Teeswater, O.)	5
J. B. Benson, M.D. (Chatham, N.B.)	5
L. A. Fortier, M.D. (St. David Q.)	5
J. A. McArthur, M.D. (Fort Elgin, O.)	5
John Campbell, M.D. (Seaforth, O.)	5
Total	$48,906

3. ENDOWED CHAIRS, ETC.

SIR DONALD A. SMITH CHAIR OF PATHOLOGY, endowed in 1893 by the Hon. Sir Donald A. Smith with the sum of	$50,000
SIR DONALD A. SMITH ENDOWMENT FOR THE DEPARTMENT OF HYGIENE, endowed in 1893 with the sum of	50,000
MRS. MARY DOW BEQUEST—Bequest by the will of the late Mrs. Mary Dow for the Faculty of Medicine, 1893, $10,000, less Government Tax of 10 per cent	9,000
JOHN H. R. MOLSON DONATION—in 1893, $25,000 for the purchase of land and $35,000 for additional building and equipment	60,000
WALTER DRAKE, ESQ., for benefit of Chair of Physiology, an annual donation of $500 given 1891 to 1897	3,500

DR. ROBERT CRAIK FUND—

Mr. John McDougall, toward formation of above (1893-94). 1,000
Jane F. Learmont, bequest do do (1894).....3,000 } 4,000

JOSEPH MORLEY DRAKE, CHAIR OF PHYSIOLOGY, endowed in 1898 by Walter Drake, Esq., with the sum of..... 10,000

4. MEDALS AND SCHOLARSHIPS.

In 1865 the "Holmes Gold Medal" was founded by the Faculty of Medicine as a memorial of the late Andrew Holmes, Esq., M.D., LL.D., late Dean of the Faculty of Medicine, to be given to the best student in the graduating class in Medicine, who should undergo a special examination in all the branches whether Primary or Final.

In 1878 the "Sutherland Gold Medal" was founded by Mrs. Sutherland of Montreal, in memory of her late husband, Prof. William Sutherland, M.D., for competition in the classes of Theoretical and Practical Chemistry in the Faculty of Medicine, together with creditable standing in the Primary Examinations.

THE DAVID MORRICE SCHOLARSHIP—in the subject of Institutes of Medicine, in the Faculty of Medicine—founded in 1881—value $10). (Terminated in 1883.)

5. LIBRARY, MUSEUM AND APPARATUS.

For the fittings of the Library and Museum of the Faculty of Medicine, 1872.

G. W. Campbell, A.M., M.D.	$1200	Forward	$2,000
W. E. Scott, M.D	200	Robert Craik, M.D	200
Wm. Wright, M.D	200	Geo. E. Fenwick, M.D.	200
Robert P. Howard, M.D	200	Joseph M. Drake, M.D.	200
Duncan C. MacCallum, M.D.	200	George Ross, M.A., M.D	50
Forward	$2,000	Total	$2,650

The Professors and Lecturers in the Summer Sessions of the Faculty of Medicine..... Donation to Apparatus, Museum Library, etc., of the Medical Faculty, 188', $1,182; 1888, $1,023. $2,205

For Physiological Laboratory of Faculty of Medicine, 1879.

Dr. Campbell	$100	Forward	$700
Dr. Howard	100	Dr. Ross	50
Dr. Craik	100	Dr. Roddick	50
Dr MacCallum	100	Dr. Buller	50
Dr. Drake	100	Dr. Gardner	50
Dr. Godfrey	100	Dr. Osler	50
Dr. McEachran, F.R.C.V.S.	100		
Forward	$700	Total	$950

Cameron Obstetric Collection.

Dr. J. C. Cameron $10,000

6. MISCELLANEOUS.

Anonymous Donor toward Expenses of Pathology for Session 1892-93..... $500

VI. ENDOWMENTS AND SUBSCRIPTIONS FOR THE FACULTY OF LAW.

1. ENDOWED CHAIRS, ETC.

THE GALE CHAIR, in the Faculty of Law, endowed in 1884 by the late Mrs. Andrew Stuart (*née* Agnes Logan Gale) of Montreal, in memory of her father, the late Hon. Mr. Justice Gale.—$25,000.

THE WILLIAM C. MACDONALD FACULTY OF LAW ENDOWMENT, founded by Wm. C. Macdonald, Esq., in 1890—$150,000. Supplemented in 1897 by $50,000. Total $200,000.

W. C. MACDONALD, ESQ., remodelling part of East Wing in 1895 for Class Rooms, Lecture Rooms, etc., for Law Faculty.

2. MEDAL.

In 1865 the "Elizabeth Torrance Gold Medal" was founded and endowed by John Torrance, Esq., of St. Antoine Hall, Montreal, in memory of the late Mrs. John Torrance, for the best student in the graduating class in Law, and more especially for the highest proficiency in Roman Law.

VII. GRADUATES' FUNDS.

1. THE FUND FOR ENDOWMENT OF THE LIBRARY.

The Graduates' Society of the University, in 1876, passed the following Resolution:—

Resolved:—"That the members and graduates be invited to subscribe to a fund "for the endowment of the Libraries of the University; said fund to be invested "and the proceeds applied under the supervision of the Council of the Society in "annual additions to the Libraries; an equitable division of said proceeds to be "made by the Council between the University Library and those of the Professional Faculties."

In terms thereof subscriptions have been paid in to the Graduates's Society, amounting in all to $3,120; the interest on which is annually expended in the purchase of books for the several libraries under the direction of a special committee appointed for that purpose.

2. THE DAWSON FELLOWSHIP FOUNDATION.

The Graduates' Society of the University, in 1880, and in commemoration of the completion by Dr. Dawson of his twenty-fifth year as Principal, resolved to raise with the assistance of their friends, a fund towards the Endowment of the Fellowship, under the above name.

Details of the scheme can be had from the Treasurer, Francis Topp, B.A., B.C.L. The following subscriptions have been announced to date, May 1st, 1897. They are payable in one sum, in instalments, without interest or with interest till payment of capital, as subscribers have elected.

Alphabetically arranged.

Abbott, H., B.C.L.	$ 60
Archibald, H., B.A.Sc.	20
Bethune, M. B., M.A., B.C.L.	50
Carter C. B., B.C.L.	100
Cruickshank, W. G., B.C.L.	100
Dawson, W. B., M.A., Ma.E.	50
Dougall, J. R., M.A.	250
Gibb, C., B.A.	100
Hall, Rev. Wm., M.A.	100
Hall, J. S., jun., B.A., B.C.L.	100
Harrington, B. J., B.A., Ph.D.	50
Hutchinson, M., B.C.L.	400
Kirby, J., LL.D., D.C.L.	50
Krans, Rev. E. H., M.A., LL.D.	100
Leet, S. P., B.C.L.	100
Lighthall, W. D., M.A., B.C.L.	100
Forward	$1,730

Forward	$1,730
Lyman, H. H., M.A.	100
Lyman, A. C., M.A., B.C.L.	50
McCormick, D., B.C.L.	100
McGibbon, R. D., B.A., B.C.L.	100
McGoun, A., jun. M.A., B.C.L.	50
McLennan, J. S., B.A.	100
Ramsay, R. A., M.A., B.C.L.	50
Spencer, J. W., B.A.Sc., Ph.D.	50
Stephen, C. H., B.C.L.	100
Stewart, D. A., B.A.Sc.	20
Stewart, J., M.D.	60
Tait, M. M., B.C.L.	100
Taylor, A. D., B.A., B.C.L.	100
Trenholme, N. W. M.A., D.C.L.	400
Total to date	$3,110

EXAMINATION PAPERS

—OF THE—

McGILL UNIVERSITY,

MONTREAL.

SESSION OF 1898-99.

Montreal:
PRINTED BY JOHN LOVELL & SON,
ST. NICHOLAS STREET.
1899.

ORDER OF EXAMINATION PAPERS.

FACULTY OF ARTS.

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McGILL UNIVERSITY,
MONTREAL.

ENTRANCE, EXHIBITION AND SCHOLARSHIP EXAMINATIONS.

SEPTEMBER, 1898.

McGILL UNIVERSITY LIBRARY

FACULTY OF ARTS.

FIRST YEAR ENTRANCE EXAMINATION.

ENTRANCE EXAMINATION.

GREEK COMPOSITION, SIGHT TRANSLATION AND GRAMMAR.

THURSDAY, SEPT. 15TH :—MORNING, 9 TO 10.30.

1. Translate into Greek :—

(*a*) The general, having remained four days, marched thence.

(*b*) The queen gave to Cyrus all that she had.

(*c*) The river flows from the mountains through many large cities.

(*d*) Many of the soldiers wished to return to Greece, but Clearchus persuaded them to fight with him.

(*e*) The enemy seized the gates, through which the road leads.

(*f*) The king himself led that army.

2. Translate into English :—

Δοκεῖ γαὶ ὁ Συέννεσις τῷ μὲν ὄντι οὐκ ἐχθρὸς γενέσθαι τῷ Κύρῳ, βουληθῆναι δὲ μᾶλλον πιστὸς δοκεῖν εἶναι βασιλεῖ, ἵνα σωτηρίαν ἔχοι εἴ πως μὴ νικήσειεν ἐκεῖνος. Τοιαῦτα οὖν ἐν νῷ ἔχων πρῶτον μὲν τὴν γυναικα παρὰ Κῦρον ἀπέστειλε πολλὰ δῶρα φέρουσνα, δεύτερον δὲ τὰ ἄκρα τῶν ὀρέων, ἅπερ καὶ αὐτὸς κατέλαβε, ὡς τάχιστα

κατέλιπε ἐγγὺς ὄντος τοῦ στρατεύματος ἵνα τὴν φιλίαν ἐπιδείξειεν· φοβεῖσθαι δὲ ἔφασκεν, οὐ τὸ ὂν λέγων.

3. Give the 2nd sing. aor. ind. pass ; dat. plur. fem. aor. part. mid. ; 3rd sing. pres. subj. mid. ; 2nd sing. aor. imp. mid. ; 2nd plur. aor. ind. act. ; sec. plur. masc. fut. part. act. of πλέκω, δικαιόω, ἀνατίθημι, ἔχω, πείθω.

4. Give acc. and dat. sing. and gen. and dat. plur. of λεώς, ὀδούς, μήτηρ, χάρις, πούς, πολύς (all genders) ἡδύς (all genders in positive, comparative, and superlative) οὗτος (all genders).

5. What do you know of the usage of επι, κατά, μετά ?

6. What do you know of the constructions used with ὥστε and πρίν ?

ENTRANCE EXAMINATION.

XENOPHON I.

THURSDAY, SEPTEMBER 15TH :—MORNING, 10.30 TO 12.

1. Translate, explaining construction of words and phrases underlined :—

(a) Κῦρος δ' οὖν ἀνέβη ἐπὶ τὰ ὄρη οὐδενὸς κωλύοντος, καὶ εἶδε τὰς σκηνὰς οὗ οἱ Κίλικες ἐφύλαττον. ἐντεῦθεν δὲ κατέβαινεν εἰς πεδίον μέγα καὶ καλόν, ἐπίρρυτον, καὶ δένδρων παντοδαπῶν ὑμπλεων καὶ ἀμπέλων· πολὺ δὲ καὶ σήσαμον καὶ μελίνην καὶ κέγχρον καὶ πυροὺς καὶ κριθὰς φέρει. ὄρος δ' αὐτὸ περιέχει ὀχυρὸν καὶ ὑψηλὸν πάντῃ ἐκ θαλάττης εἰς θάλατταν.

(*b*) ἔδοξε ταῦτα, καὶ ἄνδρας ἑλόμενοι σὺν Κλεάρχῳ πέπουσιν οἳ ἠρώτων Κῦρον τὰ δόξαντα τῇ στρατιᾷ. ὁ δ' ἀπεκρίνατο ὅτι ἀκούοι Ἀβροκόμαν ἐχθρὸν ἄνδρα ἐπὶ τῷ Εὐφράτῃ ποταμῷ εἶναι, ἀπέχοντα δώδεκα σταθμούς· πρὸς τοῦτον οὖν ἔφη βούλεσθαι ἐλθεῖν· κἂν μὲν ἢ ἐκεῖ, τὴν δίκην ἔφη χρῄζειν ἐπιθεῖναι αὐτῷ, ἢν δὲ φύγῃ, ἡμεῖς ἐκεῖ πρὸς ταῦτα βουλευσόμεθα. ἀκούσαντες δὲ ταῦτα οἱ αἱρετοὶ ἀπαγγέλλουσι τοῖς στρατιώταις· τοῖς δὲ ὑποψία μὲν ἦν ὅτι ἄγοι πρὸς βασιλέα, ὅμως δὲ ἐδόκει ἕπεσθαι.

(*c*) ἐγὼ οὖν φημι ὑμᾶς χρῆναι διαβῆναι τὸν Εὐφράτην ποταμὸν πρὶν δῆλον εἶναι ὅ,τι οἱ ἄλλοι Ἕλληνες ἀποκρινοῦνται Κύρῳ. ἢν μὲν γὰρ ψηφίσωνται ἕπεσθαι, ὑμεῖς δόξετε αἴτιοι εἶναι ἄρξαντες τοῦ διαβαίνειν, καὶ ὡς προθυμοτάτοις οὖσιν ὑμῖν χάριν εἴσεται Κῦρος καὶ ἀποδώσει. ἐπίσταται δ' εἴ τις καὶ ἄλλος.

(*d*) εὖ γὰρ ἴστε ὅτι τὴν ἐλευθερίαν ἑλοίμην ἂν ἀντὶ ὧν ἔγω πάντων καὶ ἄλλων πολλαπλασίων. ὅπως δὲ καὶ εἰδῆτε εἰς οἷον ἔρχεσθε ἀγῶνα, ὑμᾶς εἰδὼς διδάξω. τὸ μὲν γὰρ πλῆθος πολὺ καὶ κραυγῇ πολλῇ ἐπίασιν· ἂν δὲ ταῦτα ἀνάσχησθε, τὰ ἄλλα καὶ αἰσχυνεῖσθαί μοι δοκῶ οἵους ἡμῖν γνώσεσθε τοὺς ἐν τῇ χώρᾳ ὄντας ἀνθρώπους.

(*e*) καὶ γὰρ ἔργῳ ἐπεδείκνυτο καὶ ἔλεγεν ὅτι οὐκ ἄν ποτε προοῖτο, ἐπεὶ ἅπαξ φίλος αὐτοῖς ἐγένετο, οὐδ' εἰ ἔτι μὲν μείους γένοιντο, ἔτι δὲ κάκιον πράξειαν. φανερὸς δ' ἦν καὶ εἴ τίς τι ἀγαθὸν ἢ κακὸν ποιήσειεν αὐτόν, νικᾶν πειρώμενος· καὶ εὐχὴν δέ τινες αὐτοῦ ἐξέφερον ὡς εὔχοιτο τοσοῦτον χρόνον ζῆν ἔστε νικῴη καὶ τοὺς εὖ καὶ τοὺς κακῶς ποιοῦντας ἀλεξόμενος.

2. Parse fully ἀπεκρίνατο, ἐλθεῖν, ἐπιθεῖναι, δόξαντα, χρῆναι, ἀποκρινοῦνται, εἴσεται, ἴστε, ἐπίασιν, ἀνάσχησθε, αἰσχυνεῖσθαι, μείους, πράξειαν, νικῴη, explaining their constructions in the above extracts.

3. Draw a map of the route of the 10,000 as far as Thapsacus.

ENTRANCE EXHIBITION EXAMINATION.

GREEK COMPOSITION AND SIGHT TRANSLATION (for Candidates who do not offer Books.)

THURSDAY, SEPT. 15TH:—MORNING, 10 TO 12.

1. Translate into Greek:—

(*a*) To remain here is easy; to advance against the king brings many great dangers.

(*b*) He said that the rest had not yet come.

(*c*) Do you know whether this road leads to Ephesus?

(*d*) Let us march at once, soldiers, that we may cross the river before the enemy ravage the country.

(*e*) In the time of our fathers Cyrus, wishing to obtain the rule of the whole land, led up many Greeks to Cunaxa.

(*f*) He sent men to announce to the general, that, unless he retired at once, it would in a short time be impossible to do so.

2. Translate into English:—

ΑΓ. ποῖ γῆς ἄνακτα τῆσδε Θησέα μολών
εὕροιμ' ἄν, ὦ γυναῖκες; εἴπερ ἴστε, μοι
σημήνατ'· ἆρα τῶνδε δωμάτων ἔσω;

ΧΟ. ὅδ' αὐτὸς ἔξω δωμάτων πορεύεται.
ΑΓ. Θησεῦ, μερίμνης ἄξιον φέρω λόγον
σοὶ καὶ πολίταις οἵ τ' Ἀθηναίων πόλιν
ναίουσι καὶ γῆς τέρμονας Τροιζηνίας.
ΘΗ. τί δ' ἔστι; μῶν τις συμφορὰ νεωτέρα
δισσὰς κατείληφ' ἀστυγείτονας πόλεις;
ΑΓ. Ἱππόλυτος οὐκέτ' ἔστιν, ὡς εἰπεῖν ἔπος·
δέδορκε μέντοι φῶς ἐπὶ σμικρᾶς ῥοπῆς,

ENTRANCE EXHIBITION EXAMINATION.

GREEK TRANSLATION AT SIGHT.

THURSDAY, SEPTEMBER 15TH :—MORNING, 9 TO 10.

Translate into English :—

Περί γε μὴν τῆς εἰς χρήματα δικαιοσύνης ποῖα ἄν τις μείζω τεκμήρια ἔχοι τῶνδε; ὑπὸ γὰρ Ἀγησιλάου στέρεσθαι μὲν οὐδεὶς οὐδὲν πώποτε ἐνεκάλεσεν, εὖ δὲ πεπονθέναι πολλοὶ πολλὰ ὡμολόγουν. ὅτῳ δὲ ἡδὺ τὰ αὑτοῦ διδόναι ἐπ' ὠφελείᾳ ἀνθρώπων, πῶς ἂν οὗτος ἐθέλοι τὰ ἀλλότρια ἀποστερεῖν ἐφ' ᾧ κακόδοξος εἶναι; εἰ γὰρ χρημάτων ἐπιθυμοίη, πολὺ ἀπραγμονέστερον τὰ αὑτοῦ φυλάττειν ἢ τὰ μὴ προσήκοντα λαμβάνειν.

FIRST YEAR EXHIBITION EXAMINATION.

XENOPHON AND HOMER.

THURSDAY, SEPTEMBER 15TH:—MORNING, 10 TO 12.

Candidates are required to do A, with B (1) or B (2), and C (1) or C (2).

A. Translate:—

(α) Ἐπύαξα δὲ ἡ Συεννέσιος γυνὴ προτέρα Κύρου πέντε ἡμέραις εἰς Ταρσοὺς ἀφίκετο· ἐν δὲ τῇ ὑπερβολῇ τῶν ὀρέων τῇ εἰς τὸ πεδίον δύο λόχοι τοῦ Μένωνος στρατεύματος ἀπώλοντο· οἱ μὲν ἔφασαν ἁρπάζοντάς τι κατακοπῆναι ὑπὸ τῶν Κιλίκων, οἱ δὲ ὑπολειφθέντας καὶ οὐ δυναμένους εὑρεῖν τὸ ἄλλο στράτευμα οὐδὲ τὰς ὁδοὺς εἶτα πλανωμένους ἀπολέσθαι· ἦσαν δ' οὖν οὗτοι ἑκατὸν ὁπλῖται.

Explain the cases Κύρου, ἡμέραις, and parse κατακοπῆναι.

(β) καὶ οἱ μὲν ὄνοι, ἐπεί τις διώκοι, προδραμόντες ἔστασαν· πολὺ γὰρ τῶν ἵππων ἔτρεχον θᾶττον· καὶ πάλιν, ἐπεὶ πλησιάζοιεν οἱ ἵπποι, ταὐτὸν ἐποίουν, καὶ οὐκ ἦν λαβεῖν, εἰ μὴ διαστάντες οἱ ἱππεῖς θηρῷεν διαδεχόμενοι. τὰ δὲ κρέα τῶν ἁλισκομένων ἦν παραπλήσια τοῖς ἐλαφείοις, ἁπαλώτερα δέ. στρουθὸν δὲ οὐδεὶς ἔλαβεν· οἱ δὲ διώξαντες τῶν ἱππέων ταχὺ ἐπαύοντο· πολὺ γὰρ ἀπέσπα φεύγουσα, τοῖς μὲν ποσὶ δρόμῳ, ταῖς δὲ πτέρυξιν αἴρουσα, ὥσπερ ἱστίῳ χρωμένη.

Explain the cases τῶν ἵππων, τοῖς ἐλαφείοις, τῶν ἱππέων, and the mood πλησιάζοιεν. Parse ἔστασαν.

(γ) ἢν δ' ἡμεῖς νικήσωμεν, ἡμᾶς δεῖ τοὺς ἡμετέρους φίλους τούτων ἐγκρατεῖς ποιῆσαι. ὥστε οὐ τοῦτο δέδοικα μὴ οὐκ ἔχω ὅ,τι δῶ.

Explain fully the constructions in δέδοικα μὴ οὐκ ἔχω ὅτι δῶ.

B. (1) Translate :—

(α) Ἦ ῥά νύ μοί τι πίθοιο. Λυκάονος υἱὲ δαΐφρον ;
τλαίης κεν Μενελάῳ ἐπιπροέμεν ταχὺν ἰόν·
πᾶσι δέ κε Τρώεσσι χάριν καὶ κῦδος ἄροιο,
ἐκ πάντων δὲ μάλιστα Ἀλεξάνδρῳ βασίλῆϊ.
Τοῦ κεν δὴ πάμπρωτα παρ' ἀγλαὰ δῶρα φέροιο,
αἴ κεν ἴδῃ Μενελαον Ἀρήϊον Ἀτρέος υἱὸν
σῷ βέλεϊ δμηθέντα, πυρῆς ἐπιβάντ' ἀλεγεινῆς.

Explain the moods πίθοιο, τλαίης, ἴδῃ, and the cases τοῦ, πυρῆς. Parse ἐπιπροέμεν. Explain the construction of ἐπιβαντ'.

(β) Οἱ δὲ χολωσάμενοι Καδμεῖοι, κέντορες ἵππων,
ἂψ ἄρ' ἀνερχομένῳ πυκινὸν λόχον εἶσαν ἄγοντες,
κούρους πεντήκοντα· δύω δ' ἡγήτορες ἦσαν,
Μαίων Αἱμονίδης, ἐπιείκελος ἀθανάτοισιν,
υἱός τ' Αὐτοφόνοιο, μενεπτόλεμος Πολυφόντης.
Τυδεὺς μὲν καὶ τοῖσιν ἀεικέα πότμον ἐφῆκεν·
πάντας ἔπεφν', ἕνα δ' οἷον ἴει οἰκόνδε νέεσθαι·
Μαίον' ἄρα προέηκε, θεῶν τεράεσσι πιθήσας.

Explain the forms εἶσαν, ἔπεφνε, μενεπτόλεμος.

B. (2) Translate :—

(α) Οὐδὲ γὰρ οὐδὲ Δρύαντος υἱός, κρατερὸς Λυκόοργος,
δὴν ἦν, ὅς ῥα θεοῖσιν ἐπουρανίοισιν ἔριζεν·
ὅς ποτε μαινομένοιο Διωνύσοιο τιθήνας
σεύε κατ' ἠγάθεον Νυσήϊον· αἱ δ' ἅμα πᾶσαι
θύσθλα χαμαὶ κατέχευαν, ὑπ' ἀνδροφόνοιο Λυκούργου
θεινόμεναι βουπλῆγι· Διώνυσος δὲ φοβηθεὶς
δύσεθ' ἁλὸς κατὰ κῦμα· Θέτις δ' ὑπεδέξατο κόλπῳ
δειδιότα· κρατερὸς γὰρ ἔχε τρόμος ἀνδρὸς ὁμοκλῇ.

Explain the forms κατέχευαν, δειδιότα. What do you know of the myth to which reference is here made ? Explain the constructions of θεοῖσιν, βουπλῆγι, κόλπῳ.

(β) καὶ κεν ἐν Ἄργει ἐοῦσα πρὸς ἄλλης ἱστὸν ὑφαίνοις
καί κεν ὕδωρ φορέοις Μεσσηΐδος ἢ Ὑπερείης,
πόλλ' ἀεκαζομένη, κρατερὴ δ' ἐπικείσετ' ἀνάγκη·
καί ποτέ τις εἴπῃσιν, ἰδὼν κατὰ δάκρυ χέουσαν·
Ἕκτορος ἥδε γυνή, ὃς ἀριστεύεσκε μάχεσθαι
Τρώων ἱπποδάμων, ὅτε Ἴλιον ἀμφεμάχοντο.
Ὣς ποτέ τις ἐρέει· σοὶ δ' αὖ νέον ἔσσεται ἄλγος
χήτεϊ τοιοῦδ' ἀνδρὸς ἀμύνειν δούλιον ἦμαρ.
Ἀλλά με τεθνηῶτα χυτὴ κατὰ γαῖα καλύπτοι,
πρίν γ' ἔτι σῆς τε βοῆς σοῦ θ' ἑλκηθμοῖο πυθέσθαι.

Explain the words ὑφαίνοις, εἴπῃσιν, καλύπτοι, ἐπικείσετ', the form τεθνηῶτα, and the case βοῆς.

C. (1) Translate :—

(α) Χρύσειοι δ' ἄρα κοῦροι ἐϋδμήτων ἐπὶ βωμῶν
Ἕστασαν αἰθομένας δαῖδας μετὰ χερσὶν ἔχοντες,
Φαίνοντες νύκτας κατὰ δώματα δαιτυμόνεσσιν.
Πεντήκοντα δέ οἱ δμωαὶ κατὰ δῶμα γυναῖκες
Αἱ μὲν ἀλετρεύουσι μύλης ἔπι μήλοπα καρπὸν,
Αἱ δ' ἱστοὺς ὑφόωσι καὶ ἠλάκατα στρωφῶσιν
Ἥμεναι, οἷά τε φύλλα μακεδνῆς αἰγείροιο·
Καιροσέων δ' ὀθονέων ἀπολείβεται ὑγρὸν ἔλαιον.
Ὅσσον Φαίηκες περὶ πάντων ἴδριες ἀνδρῶν
Νῆα θοὴν ἐνὶ πόντῳ ἐλαυνέμεν, ὣς δὲ γυναῖκες
Ἱστὸν τεχνήσσαι· περὶ γάρ σφισι δῶκεν Ἀθήνη
Ἔργα τ' ἐπίστασθαι περικαλλέα καὶ φρένας ἐσθλάς.

Explain the forms ἕστασαν, ἐλαύτεμεν. Write a note on the constructions μετὰ χερσίν, φαίνοντες νύκτας. What case is ὀθονέων, and why? What is exceptional about δὲ in the 10th lines of this extract.

(β) Τὸν δ' αὖτ' Ἀλκίνοος ἀπαμείβετο φώνησέν τε·
"Ξεῖν', οὔ μοι τοιοῦτον ἐνὶ στήθεσσι φίλον κὴρ
Μαψιδίως κεχολῶσθαι. ἀμείνω δ' αἴσιμα πάντα,

Αἲ γὰρ, Ζεῦ τε πάτερ καὶ Ἀθηναίη καὶ Ἄπολλον,
Τοῖος ἐὼν οἷός ἐσσι, τά τε φρονέων ἅ τ' ἐγώ περ,
Παῖδά τ' ἐμὴν ἐχέμεν καὶ ἐμὸς γαμβρὸς καλέεσθαι
Αὖθι μένων· οἶκον δέ τ' ἐγὼ καὶ κτήματα δοίην,
Εἴ κ' ἐθέλων γε μένοις· ἀέκοντα δέ σ' οὔ τις ἐρύξει
Φαιήκων· μὴ τοῦτο φίλον Διῒ πατρὶ γένοιτο.

What is the construction of ἐχέμεν, δοίην, γένοιτο.

C. (2) Translate :—

(α) σχεδόθεν δέ οἱ ἦλθεν Ἀθήνη
Ἀνδρὶ δέμας ἐϊκυῖα νέῳ, ἐπιβώτορι μήλων,
Παναπάλῳ, οἷοί τε ἀνάκτων παῖδες ἔασιν,
Δίπτυχον ἀμφ' ὤμοισιν ἔχουσ' εὐεργέα λώπην·
Ποσσὶ δ' ὑπὸ λιπαροῖσι πέδιλ' ἔχε, χερσὶ δ ἄκοντα.
Τὴν δ' Ὀδυσεὺς γήθησεν ἰδὼν, καὶ ἐναντίος ἦλθεν,
Καί μιν φωνήσας ἔπεα πτερόεντα προσηύδα·
Ὦ φίλ', ἐπεί σε πρῶτα κιχάνω τῷδ' ἐνὶ χώρῳ,
Χαῖρέ τε καὶ μή μοί τι κακῷ νόῳ ἀντιβολήσαις·
Ἀλλὰ σάω μὲν ταῦτα, σάω δ' ἐμέ· σοὶ γὰρ ἔγωγε
Εὔχομαι ὥς τε θεῷ, καί σευ φίλα γούναθ' ἱκάνω.

Explain the forms ἐϊκυῖα, σάω, and the cases δέμας, σε.

(β) Ὣς εἰποῦσα θεὰ σκέδασ' ἠέρα. εἴσατο δὲ χθών.
Γήθησέν τ' ἄρ' ἔπειτα πολύτλας δῖος Ὀδυσσεὺς
Χαίρων ᾗ γαίῃ, κύσε δὲ ζείδωρον ἄρουραν.
Αὐτίκα δὲ νύμφῃς ἠρήσατο χεῖρας ἀνασχών·
"Νύμφαι νηϊάδες, κοῦραι Διὸς, οὔ ποτ' ἔγωγε
Ὄψεσθ' ὔμμ' ἐφάμην· νῦν δ' εὐχωλῇς ἀγανῇσιν
Χαίρετ'· ἀτὰρ καὶ δῶρα διδώσομεν, ὡς τὸ πάρος περ,
Αἴ κεν ἐᾷ πρόφρων με Διὸς θυγάτηρ ἀγελείη
Αὐτόν τε ζώειν καί μοι φίλον υἱὸν ἀέξῃ."

Explain ᾗ, ὄψεσθ', ὔμμ, εὐχωλῇς.

ENTRANCE EXHIBITION EXAMINATION.

GREEK COMPOSITION.

TUESDAY, SEPT. 20TH :—2 TO 3 P.M.

1. If Cyrus had not been killed, he would have conquered the king.

2. He said that all those who had conquered were present.

3. When the general had arrived, the queen gave him many talents.

4. If the enemy should seize the gate, it would no longer be easy to go through.

5. Clearchus said that it was difficult to return to Greece since Cyrus had a large fleet and would be able to prevent them.

6. It is in your power, soldier, if you fight bravely, to obtain great glory.

7. He told them not to wait longer, lest the enemy should escape.

8. I think that those with the king, being prudent, but not brave, will not advance against us.

ENTRANCE EXHIBITION EXAMINATION.

ADDITIONAL COMPOSITION AND SIGHT TRANSLATION (GREEK).

WEDNESDAY, SEPT. 21ST:—2 TO 3.30 P.M.

1. Translate into Greek:

After the death of Cyrus, the Greeks no longer wished to march against the King, but rather to return home as quickly as possible. And all agreed to entrust the command to Clearchus, as being the fittest man to undertake such a task. But when the Persians had taken him by treachery and killed him, Xenophon came forward and spoke, telling them in what danger they were in and in what way it was possible to escape. Accordingly they chose him as general, though he was a private person and held no generalship.

2. Translate into English;

ἐγὼ τοίνυν, ὦ ἄνδρες δικασταί, ἠξ ουν ἱκανὰ εἶναι τὰ κατηγορημένα· μέχρι γὰρ τούτου νομιζω χρῆναι κατηγορεῖν, ἕως ἂν θανάτου δόξῃ τῷ φεύγοντι ἄξια εἰργάσθαι. ταύτην γὰρ ἐσχάτην δίκην δυνάμεθα παρ' αὐτῶν λαβεῖν· ὥστ' οὐκ οἶδ', ὅ, τι δεῖ πολλὰ κατηγορεῖν τοιούτων ἀνδρῶν, οἳ οὐδ' ὑπὲρ ἑνὸς ἑκάστου τῶν πεπραγμένων δὶς ἀποθανόντες, δίκην δοῦναιντ' ἂν ἀξίαν.

FIRST YEAR ENTRANCE EXAMINATIONS

LATIN.

THURSDAY, SEPTEMBER 15TH:—2 TO 5 P.M.

I. LATIN GRAMMAR AND COMPOSITION.

1. Decline together: quidam metus, frater meus, nullus civis.

2. Compare: parvus, vetus, maledicus; prudenter.

3. Give the genitive singular, genitive and dative plural, and gender of: corpus, robur, manus, plebs, miles, cor.

4. Write out the singular and plural of the future indicative and present subjunctive of: sequor, nolo, adsum.

5. Give the rules for expressing in Latin, "*motion to a place*" and "*motion from a place.*"

6. Translate and fully explain the grammatical construction of words printed in italics:

(*a*) perfacile *factu* esse illis probat *conata* perficere.

(*b*) pontem in ararе *faciendum* curat.

(*c*) Boii *novissimis praesidio* erant.

(*d*) lacrimis *oculos* suffusa nitentes.

(*e*) infert se saeptus *nebula*—mirabile *dictu*—per medios miscetque *viris*, neque cernitur *ulli*.

7. Translate into Latin:

(*a*) The father, moreover, had held the sovereignty during many years

(*b*) Their customs require him to plead his cause under arrest.

(*c*) We will either persuade them or compel them by force.

(*d*) Will you promise to give Caesar satisfaction for the wrongs you have done him?

(*e*) If I had needed anything of you, I would have come to you.

II. Translation at Sight.

Varus, dux Romanus, ab Arminio in Germania proelio victus est. Qui cum vidisset iam nullam esse spem salutis, gladio stricto, sese occidit. Caput eius postea a principe Germanorum ad Augustum Romam missum est. Ea clades (*disaster*) tanto dolore Augustum affecit ut multos postea menses id nunquam videret quin cottidie clamaret 'Redde mihi, Vare, meas legiones.'

III. Caesar and Virgil.

Translate:

(*a*) Quamobrem placuit ei, ut ad Ariovistum legatos mitteret, qui ab eo postularent, uti aliquem locum medium utriusque colloquio deligeret: velle sese de re publica et summis utriusque rebus cum eo agere. Ei legationi Ariovistus respondit: Si quid ipsi a Caesare opus esset, sese ad eum venturum fuisse; si quid ille se velit, illum ad se venire oportere. Praeterea se neque sine exercitu in eas partes Galliae venire audere, quas Caesar possideret, neque exercitum sine magno commeatu atque molimento in unum locum contrahere posse.

(*b*) Horum adventu tanta rerum commutatio est facta, ut nostri etiam qui vulneribus confecti procubuissent, scutis innixi proelium redintegrarent, tum calones perterritos hostes conspicati etiam inermes armatis occurrerent, equites vero, ut turpitudinem fugae virtute delerent, omnibus in locis pugnarent, quo se legionariis militibus praeferrent.

(*c*) Obstupuit simul ipse, simul percussus Achates
Laetitiaque metuque : avidi coniungere dextras
Ardebant ; sed res animos incognita turbat.
Dissimulant ; et nube cava speculantur amicti,
Quae fortuna viris ; classem quo litore linquant ;
Quid veniant : cunctis nam lecti navibus ibant,
Orantes veniam, et templum clamore petebant.

Give the principal parts of : *velle*, *respondit*, *procubuissent*, *innixi*, *percussus*, *amicti*.

Scan the first three lines of the last extract.

ENTRANCE EXHIBITION EXAMINATIONS.

LATIN.

TRANSLATION AT SIGHT.

THURSDAY, SEPTEMBER 15TH :—AFTERNOON, 2 TO 3.

I.

Memoriam in Themistocle fuisse singularem ferunt. Itaque cum ei Simonides artem memoriae polliceretur, "Oblivionis," inquit, "mallem ; nam memini etiam, quae nolo ; oblivisci non possum, quae volo."

Themistocles cum consuleretur, utrum bono viro pauperi, an minus probato diviti filiam collocaret, "Ego vero," inquit, "malo virum, qui pecunia egeat, quam pecuniam, quae viro."

Themistocles interroganti, utrum Achilles esse mallet, an Homerus, respondit : "Tu vero mallesne te in Olympico certamine victorem renuntiari, an praeco esse, qui victorum nomina proclamat."

II.

Donec eris felix, multos numerabis amicos :
tempora si fuerint nubila, solus eris.
Aspicis ut veniant ad candida tecta columbae ?
accipiat nullas sordida turris aves.
Horrea formicae tendunt ad inania nunquam :
nullus ad amissas ibit amicus opes.
Utque comes radios per solis euntibus umbra,
cum latet hic pressus nubibus, illa fugit :
Mobile sic sequitur fortunae lumina vulgus :
quae simul inducta nube teguntur, abit.

III.

Capuam a Calibus reditum est, Atellaque et Calatia in deditionem acceptae : ibi quoque in eos qui capita rerum erant animadversum. Ita ad septuaginta principes senatus interfecti, trecenti ferme nobiles Campani in carcerem conditi : alii per sociorum Latini nominis urbes in custodias dati variis casibus interierunt, multitudo alia civium Campanorum venum data. De urbe agroque reliqua consultatio fuit, quibusdam delendam censentibus urbem praevalidam propinquam inimicam : ceterum praesens utilitas vicit, nam propter agrum, quem omni fertilitate satis constabat primum in Italia esse, urbs servata est ut esset aliqua aratorum sedes.

ENTRANCE EXHIBITION EXAMINATIONS.

LATIN.

THURSDAY, SEPTEMBER 15TH :—AFTERNOON, 3 TO 5.

NOTE :—Candidates may substitute (*D*) for (*A*), (*E*) for (*B*), and (*F*) for (*C*).

(*A*) VIRGIL, AENEID, BOOK I.

" O fortunati, quorum iam moenia surgunt !
Aeneas ait, et fastigia suspicit urbis.
Infert se saeptus nebula, *mirabile dictu*,
Per medios, miscetque *viris ;* neque *cernitur ulli*.
Lucus in urbe fuit media, laetissimus *umbrae*,
Quo primum iactati undis et turbine Poeni
Effodere loco signum, quod regia Iuno
Monstrarat, caput acris equi ; sic nam *fore* bello
Egregiam et facilem *victu* per saecula gentem.
Hic templum Iunoni ingens Sidonia Dido
Condebat, donis opulentum et numine divae ;
Aerea *cui gradibus* surgebant limina, nexaeque
Aere trabes : foribus cardo stridebat ahenis.

(*a*) Give the grammatical construction of words printed in Italics. (*b*) Parse *effodere, monstrarat, foribus.* (*c*) Scan the first three lines.

(*B*) CICERO, IN CATILINAM, I. AND II.

(*a*) Quamquam quid ego te invitem, a quo iam sciam esse praemissos qui tibi ad Forum Aurelium praestolarentur armati ? cui sciam pactam et constitutam cum Manlio diem ? a quo etiam aquilam argenteam quam tibi ac tuis omnibus confido perniciosam ac funestam futuram, cui domi tuae sacrarium scelerum tuorum constitutum fuit, sciam esse praemissam ? Tu ut illa carere diutius possis, quam venerari ad caedem proficiscens

solebas, a cuius altaribus saepe istam impiam dexteram ad necem c vium transtulisti?

(*b*) Quartum genus est sane varium et mixtum et turbulentum, qui iam pridem premuntur, qui numquam emergunt, qui partim inertia, partim male gerendo negotio, partim etiam sumptibus in vetere aere alieno vacillant: qui vademoniis, iudiciis, proscriptione bonorum defatigati, permulti et ex urbe et ex agris se in illa castra conferre dicuntur. Hosce ego non tam milites acris quam infitiatores lentos esse arbitror.

Write brief notes on the following: (1) *pontifex Maximus, aquilam argenteam, Massiliam, tabulas novas, custodiis vigiliisque, coloni municipesque.*

(*C*) Caesar, Bks. I. and II.

(*a*) Posteaquam in volgus militum elatum est, qua *arrogantia* in collo quio Ariovistus usus omni *Gallia Romanis* interdixisset, impetumque in nostros eius equites *fecissent*, eaque res colloquium ut diremisset, multo maior alacritas studiumque *pugnandi* maius exercitui iniectum est. Nihilo secius Caesar, ut ante constituerat, duas acies hostem propulsare, tertiam opus perficere iussit. Munitis castris ibi legiones reliquit et partem auxiliorum, quattuor reliquas in castra maiora reduxit.

(*b*) Instructo exercitu, magis ut loci natura deiectusque collis et necessitas temporis, quam ut rei militaris ratio atque ordo postulabat, cum, diversis legionisbus, aliae alia in parte, hostibus resisterent, sepibusque densissimis, ut ante demonstravimus, interiectis, prospectus impediretur, neque certa subsidia collocari, neque quid in quaque parte opus esset provideri, neque ab uno omnia imperia administrari poterant.

Give the grammatical construction of words italicised.

(*D*) Virgil Aeneid, Book III.

"Iamque dies alterque dies processit; et aurae
Vela vocant, tumidoque inflatur carbasus Austro.
His vatem aggredior dictis, ac talia quaeso:
'Troiugena, interpres *divum* qui numina Phoebi,
Qui tripodas, Clarii laurus, qui sidera sentis,
Et volucrum linguas et praepetis omina pennae,
Fare age—namque omnem cursum mihi prospera dixit
Religio, et cuncti suaserunt numine divi
Italiam *petere* et terras tentare *repostas*;
Sola novum *dictuque nefas*, Harpyia Celaeno
Prodigium canit, et tristes denuntiat iras,
Obscenamque famem—quae prima pericula vito?
Quidque sequens tantos *possim* superare labores?"

(*a*) Write brief notes on: *quaeso, tripodas, laurus Clarii.* (*b*) Explain the syntax of words in italics. (*c*) Give the principal parts of *canit* and *fare*. (*d*) Scan the first, third and fifth lines.

(*E*) HORACE, ODES, BK. I.

Dicam et Alciden, puerosque Ledae,
Hunc equis, illum superare pugnis
Nobilem; quorum simul alba nautis
Stella refulsit,

Defluit saxis agitatus humor,
Concidunt venti, fugiuntque nubes,
Et minax—quod sic voluere—ponto
Unda recumbit.

Romulum post hos prius, an quietum
Pompili regnum memorem, an superbos
Tarquini fasces, dubito, an Catonis
Nobile letum.

Regulum, et Scauros, animaeque magnae,
Prodigium Paullum, superante Poeno,
Gratus insigni referam Camena,
Fabriciumque.

(*a*) Account for the case of *saxis, ponto, pugnis.* (*b*) Scan the first Stanza. (*c*) Write brief explanatory notes on: *Alciden, pueros Ledae, Catonis nobile letum, Paullum, Poeno.*

(*F*) CAESAR, BELL. GALL. BKS. II AND III.

(*a*) Instructo exercitu, magis ut loci natura deiectusque collis et necessitas temporis, quam ut rei militaris ratio atque ordo postulabat, cum, diversis legionibus, aliae alia in parte, hostibus resisterent, sepibusque densissimis, ut ante demonstravimus, interiectis, prospectus impediretur neque certa subsidia collocari, neque quid in quaque parte opus esse provideri, neque ab uno omnia imperia administrari poterant.

(*b*) Ibi cum alii fossas *complerent*, alii multis telis coniectis defensores vallo munitionibusque depellerent, auxiliaresque, *quibus* ad pugnam non multum Crassus confidebat, lapidibus telisque subministrandis et ad aggerem cespitibus *comportandis* speciem atque opinionem *pugnantium* praeberent, cum item ab hostibus constanter ac non timide pugnaretur telaque ex loco superiore missa non frustra acciderent, equites, circumitis hostium castris, Crasso renuntiaverunt, non eadem esse *diligentia* ab decumana porta castra munita facilemque aditum habere.

Give the grammatical construction of words italicised.

FIRST YEAR ENTRANCE.

ENTRANCE EXHIBITION EXAMINATIONS.

LATIN PROSE COMPOSITION AND TRANSLATION AT SIGHT.

NOTE.—This paper is intended for those only who do not offer the prescribed books.

THURSDAY, SEPTEMBER 15TH:—3 TO 5 A.M.

I.

(*a*) On the very day on which the Senate was deliberating whether they ought to summon back to Rome the Master of the Horse, news was brought that he had led out the troops which had been left in the camp, and in a battle with the Samnites had suffered a great disaster. The Dictator would not even wait to learn what the Senate determined, but hurried back to camp.

(*b*) Having been banished from the country he said he was freed from her laws.

(*c*) It is uncertain where they started from, and when they will reach the city.

II.

(*a*) Caesar in eam spem venerat, se sine pugna et sine vulnere suorum rem conficere posse, quod re frumentaria adversarios interclusisset. Cur etiam secundo proelio aliquos ex suis amitteret? cur vulnerari pateretur optime de se meritos milites? cur denique fortunam periclitaretur? praesertim cum non minus esset imperatoris consilio superare quam gladio. Movebatur etiam misericordia civium quos interficiendos videbat; quibus salvis atque incolumibus rem obtinere malebat. Hoc consilium Caesaris plerisque non probabatur; milites vero palam inter se loquebantur, quoniam talis occasio victoriae dimitteretur, etiam cum vellet Caesar, sese non esse pugnaturos.

(*b*) "Dicite, Dardanidae (neque enim nescimus et urbem
et genus, auditique advertitis aequore cursum),
quid petitis? Quae causa rates aut cuius egentis
litus ad Ausonium tot per vada caerula vexit?
Sive errore viae seu tempestatibus acti,
qualis multa mari nautae patiuntur in alto,
fluminis intrastis ripas portuque sedetis,
ne fugite hospitium neve ignorate Latinos
Saturni gentem, haud vinclo nec legibus aequam,
sponte sua veterisque dei se more tenentem.
Atque equidem memini (fama est obscurior annis)
Auruncos ita ferre senes, his ortus ut agris
Dardanus Idaeas Phrygiae penetravit ad urbes
Threiciamque Samum, quae nunc Samothracia fertur.

FIRST YEAR EXHIBITIONS.

LATIN AND GREEK GRAMMAR.

TUESDAY, SEPT. 20TH :—4 TO 5 P. M.

1. Express in Oratio obliqua after a Past Tense :—Haec in omnibus Eburonum partibus gerebantur. diesque appetebat septimus, quem ad diem Caesar ad impedimenta legionemque reuerti constituerat. Hic quantum in bello fortuna possit et quantos afferat casus cognosci potuit.

2. Scan the following lines and name the metre of each :—

(*a*) Septimi, Gades aditure mecum.

(*b*) Delicta maiorum immeritus lues.

(*c*) Exegi monumentum aere perennius.

(*d*) Εὕφημα φώνει. δεῖ με γαρ στείχειν, μῆτερ.

(*e*) Acmen Septimius suos amores.

(*f*) Οἰδ' ὅτι ταχὺς καὶ παρ' ἑαυτῷ.

3. Explain very briefly what is meant by Genitive of Price, Ablative, Absolute, Indirect Question, Cognate Accusative, Oxymoron, Deliberative, Subjunctive. Add in the case of the first three an example in Latin and the case of the last three an example in Greek.

4. Parse and give the principal parts of ἐπίσχες, μεῖναι, ἠρέθην πέπυσμαι, ἐφεισάμην, γνῶναι, ἁγαμαι, regerit, oppertus, manabit, patere.

5. Translate into Latin :—

(1) He was born on the 9th of October, A. D. 232.

2) He gave Gaius £5000.

(3) He lived three years at Ephesus, and said that he would die at Athens.

6. How are conditional sentences expressed in Greek? Explain the use of ἴκ with an Indicative, adding an example from some classical author.

ENTRANCE EXHIBITION EXAMINATIONS.

LATIN PROSE COMPOSITION AND TRANSLATION AT SIGHT. (ADDITIONAL.)

WEDNESDAY, SEPTEMBER 21ST, 1898 :—3.30 TO 5 P.M.

I.

If after so great a victory the Gauls had immediately pursued the fugitives Rome would certainly have been taken, so astonished and terrified

were the citizens at the return of those who had escaped from the battle. The Gauls, however, not imagining the victory to be so great as it really was, gave way to feasting and plundering the camp. Accordingly numbers who wished to leave the city had opportunity to escape, while those who remained were able to make preparations for defending the city.

II.

Marcellus ut moenia ingressus ex superioribus urbem omnium ferme illa tempestate pulcherrimam subiectam oculis vidit, illacrimasse dicitur partim gaudio tantae perpetratae rei, partim vetusta gloria urbis. Atheniensium classes demersae et duo ingentes exercitus cum duobus clarissimis ducibus deleti occurrebant et tot bella cum Carthaginiensibus tanto cum discrimine gesta, tot tam opulenti tyranni regesque. Ea cum universa occurrerent animo, subiretque cogitatio, iam illa momento horae arsura omnia et ad cineres reditura, priusquam signa Achradinam admoveret, praemittit Syracusanos, qui intra praesidia Romana, ut ante dictum est fuerant, ut alloquio leni impellerent hostes ad dedendam urbem.

FIRST YEAR ENTRANCE EXAMINATION, 1898.

GEOMETRY.

FRIDAY, SEPTEMBER 16TH :—MORNING 9 TO 12.

[*Candidates taking only the obligatory mathematics will try the first eight questions.*

Candidates for Exhibitions and others taking the additional mathematics will omit the first four questions and try the remainder.

Either "Obligatory" or "Additional" must be written on the outside of each candidate's book or packet of answers to indicate his choice.]

1. If a parallelogram and a triangle be on the same base and between the same parallels the parallelogram is double the triangle.

2. If a right line be divided into any two parts, the rectangle under the whole line and one part is equal to the square of that part together with the rectangle under the parts.

3. Angles in the same segment of a circle are equal.

4. Draw a tangent to a circle from a point given without it.

5. Bisect a given arc of a circle.

If a tangent to a circle is parallel to a chord the point of contact will bisect the arc cut off by the chord.

6. Show that Props. 9 and 10, Euclid, Bk II., are included under the following statements :—

The sum of the squares on two straight lines is equal to twice the sum of the squares on half their sum and on half their difference.

7. Two right-angled triangles which have their hypotenuses equal and one side of the one equal to one side of the other are equal in every respect.

8. In any triangle the square on the side subtending an acute angle is less than the sum of the squares of the sides containing it by twice the rectangle contained by either of these sides and the part of it intercepted between the acute angle and the perpendicular let fall on it from the opposite angle.

(*a*) In any triangle the sum of the squares on two sides is equal to twice the square on half the base, together with twice the square on the bisector of the base.

9. Inscribe a circle in a given square.

(*a*) If the sum of one pair of opposite sides of a quadrilateral is equal to the sum of the other pair, prove that a circle may be inscribed in the figure.

10. If a straight line be drawn parallel to the base of a triangle, it cuts the sides into proportional segments, and the homologous segments are on the same side of the line.

(*a*) If any two straight lines are cut by three parallel straight lines, they are cut proportionally.

11. If four right lines be proportional, the rectangle under the extremes is equal to the rectangle under the means.

(*a*) Apply this prop. to prove that when two chords of a circle intersect, the rectangle under the segments of the one is equal to the rectangle under the segments of the other.

12. Prove that the equilateral triangle described on the hypotenuses of a right-angled triangle is equal to the sum of the equilateral triangle described on the sides.

FIRST YEAR ENTRANCE EXAMINATION.

ALGEBRA, ARITHMETIC, TRIGONOMETRY.

FRIDAY, SEPTEMBER 16TH :—AFTERNOON, 2 TO 5.

[*Candidates taking only the Obligatory Mathematics will try the first nine questions.*

Candidates for Exhibitions and others taking the Additional Mathematics will omit the first five questions and try the remainder.

Either "Obligatory" or "Additional" must be written on the outside of each candidate's book or packet of answers, to indicate his choice.]

1. Find the highest common factor of

$$x^2 - 4x + 3 \text{ and } 4x^3 - 9x^2 - 15x + 18.$$

2. Resolve into factors $(x + 2y)^2 - 81$; $x^2 - 35xy + 216y^2$ and $8x^2 - 6xy - 9y^2$.

3. Simplify the expression

$$\left\{\left(\frac{x+y}{x-y}\right) + \frac{x^2+y^2}{x^2-y^2}\right\} \div \left\{\frac{x-y}{x+y} - \frac{x^3-y^3}{x^3+y^3}\right\}$$

4. Add together $\frac{2}{5} + 1\frac{3}{6} + \frac{7}{8}$ and divide sum by the difference between $\frac{7}{8}$ and .035. Reduce result to a decimal.

5. Divide the number 100 into two parts such that the square of their difference may exceed the square of twice the less part by 2000.

6. Solve the following equations:—

(a) $\frac{x}{2} + \frac{x+1}{7} = x - 2$

(b) $\frac{4x+17}{x+3} + \frac{3x-10}{x-4} = 7$

(c) $\frac{x^2-a^2}{bx} - \frac{a-x}{b} = \frac{2x}{b} - \frac{a}{x}$

(d) $ax + by + c = 0$; $a'x + b'y + c' = 0$.

(e) $\begin{cases} 7x - 4y + 11z = 17; & 8x + 5y - 7z = 21 \\ 10x + 23y - 43z = 29. \end{cases}$

(f) $\frac{x}{x^2-1} = \frac{15-7x}{8(1-x)}$

7. Expand $(a - x)^9$ by the Binomial Theorem.

8. If the pressure of air is 14.6 lbs. to the square inch, express this in grammes to the square centimetre, a decimetre being 3.937 inches and a gramme being 15.43 grains.

9. Reduce .037$\dot{1}\dot{8}\dot{5}$ to a vulgar fraction.

10. Find how many combinations can be formed of the letters in the word *longitude*, taken four at a time. Prove any formula you may employ.

11. Find five numbers in geometrical progression such that their sum shall be 124 and the sum of the first and last equal to $4\frac{1}{4}$ times the middle

12. Define a logarithm, and prove that the logarithm of the quotient of two numbers is equal to the difference of the logarithms of the numbers.

13. Transform 32884 into the scale of which the radix is seven, explaining the process.

14. Define the two units of angular measure commonly employed, and investigate a formula for converting the expression for any angle from one unit to the other.

(*a*) If the diameter of the moon were 2,000 miles and its distance 240,000 miles, find approximately in seconds the angle it would subtend at the eye.

15. Prove

(*a*) $\sin (A-B) = \sin A \cos B - \cos A \sin B$.

(*b*) $\sin (A + B) \sin (A - B) = \sin^2 A - \sin^2 B$.

(*c*) $\tan (A + 45°) = \dfrac{1 + \tan A}{1 - \tan A}$

(*d*) $\sin A (1 + \tan A) + \cos A (1 + \cot A) = \sec A + \operatorname{cosec} A$

(*e*) $\cos A + \cos B + \cos C = 1 + 4 \sin \dfrac{A}{2} \sin \dfrac{B}{2} \sin \dfrac{C}{2}$, if $A + B + C = 180°$.

16. In any triangle prove $\sin \dfrac{A}{2} = \sqrt{\dfrac{(s - b)(s - c)}{bc}}$

17. Find the tangent, cosine, and secant of the angle whose sine $= \frac{1}{2}$.

FIRST YEAR ENTRANCE EXAMINATIONS.

ENGLISH DICTATION.

MONDAY, 19TH SEPT.:—MORNING, 9 TO 9.30.

They loved their sequestered home; I too, in the grey, small antique structure, with its low roof, its latticed casements, its mouldering walls, its avenue of aged firs, all grown aslant under the stress of mountain winds, its garden dark with yew and holly, and where no flowers but of the hardiest species would bloom, found a charm both potent and permanent. They clung to the purple moors behind and around their dwelling, to the hollow vale into which the pebbly bridlepath leading from their gate descended; and which wound between fern-banks first, and then amongst a few of the wildest little pasture-fields that ever bordered

a wilderness of heath, or gave sustenance to a flock of grey moorland sheep, with their little mossy-faced lambs:—they clung to this scene, I say, with a perfect enthusiasm of attachment. I could comprehend the feeling, and share both its strength and truth. I saw the fascination of the locality. I felt the consecration of its loneliness; my eye feasted on the outline of swell and sweep, on the wild colouring communicated to ridge and dell, by moss, by heath-bell, by flower-sprinkled turf, by brilliant bracken and mellow granite crag. These details were just to me what they were to them—so many pure and sweet sources of pleasure. The strong blast and the soft breeze; the rough and the halcyon day; the hours of sunrise and sunset; the moonlight and the clouded night, developed for me, in those regions, the same attraction as for them—wound round my faculties the same spell that entranced theirs.

FIRST YEAR ENTRANCE EXAMINATIONS.

ENGLISH ESSAY.

MONDAY, 19TH SEPT.:—MORNING, 9.30 TO 10.30.

Write an essay of at least two pages on any *one* of the following subjects:—

(*a*) The invention of printing.

(*b*) Bicycling.

(*c*) Home-keeping youth have ever homely wits.

FIRST YEAR ENTRANCE.

ENGLISH GRAMMAR.

MONDAY, 19TH SEPT.:—MORNING, 10.30 TO 12.

1. Mention the language from which each of the following words is taken, and in the case of Latin state, giving dates, the period to which each Latin word belongs: Bandit, alcohol, altar, fealty, Doncaster, chivalry, Derby, pundit, armada, cherub.

2. State whether the sounds corresponding to the following letters are (1) sonant or surd, (2) mute or spirant, (3) labial, dental, guttural or palatal: *k, d, z, ʃ, th, m.*

3. Define Common, Singular and Proper nouns, and give an instance of each. Show that a Collective noun may take a singular or a plural predicate. What difference in thought is thereby shown? Form an Abstract noun from (*a*) an adjective, (*b*) a verb, (*c*) a Common noun.

4. Give the feminine form or word corresponding to—ogre, peacock, earl, sloven; the masculine form or word corresponding to—spinster, abbess, ewe, goose. State whether you would use *he* or *she* when personifying Justice, Earth, Death, Time, Nature. Write the plurals of storey, reef, dilettante, octavo, pailful, four-in-hand, man-servant, attorney-general.

5. What rules of comparison do the following words illustrate: Larger, gayer, hotter, more honourable, greyer. Point out the difference in meaning between later and latter, elder and older, further and farther.

6. Classify the following pronouns, and then state regarding each whether it is used (*a*) as a Substantive pronoun or (*b*) as a Substantive and an Adjective pronoun or (*c*) as an Adjective pronoun only: We, that, my, self, which. Show, giving an instance of each, that adverbs are derived from adjectives, nouns, pronouns. Classify the following adverbs—well, little, then, ever, near.

7. Parse and analyse:

It must follow as the night the day;
Thou can'st not then be false to any man.

8. Explain the terms orthoœpy, phrase, apposition, hybrid, anacoluthon. Illustrate the last four.

FIRST YEAR ENTRANCE.

ENGLISH LITERATURE.

MONDAY, 19TH SEPT.:—AFTERNOON, 2 TO 3.30.

SHAKSPERE, *Richard* II. SCOTT, *Lady of the Lake.*

1. Briefly sketch the character of the Bishop of Carlisle, Bolingbroke, King Richard, York, and, as you do so, refer to incidents in the play in support of your statements.

2. Act IV, Scene I. Westminster Hall; give an outline of the scene after the entrance of Richard.

3. Explain the meaning of the following expressions, state from whom they come and where they occur:

(*a*) Doubly portcullised with my teeth and lips.
(*b*) Fantastic summer's heat.
c And hope to joy is little less in joy
Than hope enjoyed.
(*d*) Razed out my impress.
(*e*) like a deep well
That owes two buckets.

4. Give the meaning (and nothing else) of high-stomached, inhabitable, parle, appellant, benevolences, The Beggar and the King.

B.

1. Trace Fitz-James through the poem.

2. Write brief notes on Ben-Shie, Ben Venue, Coir-Uriskin, Stumah, Lufra, Teith, Saint Bride, Loch Voil, Bochastle, Clan Alpine, Coilan togle, kern, quarry, a Lennox foray, stag of ten.

3. From the Lady of the Lake, illustrate, chiefly in your own language, Scott's power as a poet when dealing with the following subjects :

(*a*) A mountain peak.

(*b*) Feminine beauty.

(*c*) Motion in a landscape.

(*d*) Colour.

ENTRANCE EXAMINATIONS.

ENGLISH LITERATURE.

TENNYSON, COWPER AND GRAY: *Selections.*

MONDAY, SEPT. 19TH :—2 TO 3.30 P.M.

(*Write the answers to the portions designated A and B in separate books.*)

A.

1. (*a*) Sketch, in a few sentences, the story of *The Lady of Shalott.* (*b*) Indicate the metre of the poem. (*c*) Follow the poet in giving a picture of Lancelot.

2. (*a*) Sketch, in a few sentences, the story of *Œnone.* (*b*) Who was Œnone ? (*c*) Picture "Idalian Aphrodite beautiful." (*d*) Make a brief note on Ida, Simois, Cassandra.

3. "You ask me why, tho' ill at ease."

——

"Of old sat Freedom on the heights."

Quote from the two poems respectively, a striking thought concerning British Freedom and Freedom in general.

4. (*a*) In what measure is *Morte d'Arthur* written ? (*b*) Whence was Excalibur brought ? (*c*) What became of it ? (*d*) Who were "the three Queens ?" (*e*) Quote three or four lines from Arthur's last speech.

5. (*a*) Give an outline of *Lancelot and Elaine*. (*b*) Mention two characteristics of Tennyson's poetry, and quote from the poem in illustration.

6. Make a few remarks, chiefly critical, on *Ulysses* and *St. Agnes' Eve*.

7. (*a*) Indicate the themes of the songs in the *The Princess*. (*b*) Point out their bearing on the poem.

B.

1. Illustrate from Gray's Elegy :—

(*a*) Precision in the use of adjectives or epithets.

(*b*) Phrases or quotations that have passed into common use.

(*c*) Gray's observation of nature.

2. Give four examples of words used by Gray in a sense different from that which they now bear ; and explain, if possible, the causes of the change in meaning.

3. Make notes on :—vermeil, sequestered, glebe, the rolling circle.

4. Give some idea of the character and disposition of Cowper, as discoverable from the poems studied.

5. Give in your own words the substance of what is contained in "The Castaway," and write a short note on Cowper's purpose in composing this poem.

MATRICULATION EXAMINATIONS.

ENGLISH HISTORY.

MONDAY, SEPT. 19TH :—AFTERNOON, 3.30 TO 5.

Answer any five questions.

1 Discuss (*a*) Roman government of Britain.

(*b*) The relations of Alfred with the Danes.

(*c*) The character of Canute.

2. (*a*) What do you know of the contest between William Rufus and Anselm,

or,

(*b*) Of that between Henry II. and Becket.

3. Indicate the most important feature of Edward I's. reign, and emphasize particularly his constitutional measures.

4. Name three principal statesmen who served Henry VIII., and describe the work of each.

5. Explain the relations of James I.
(*a*) to Spain

or

(*b*) to Parliament.

6. What wars were fought by England, 1688-1714? Add details.

7. Mention the main events of the years 1840-50.

FIRST YEAR EXHIBITION EXAMINATIONS.

ENGLISH GRAMMAR.

MONDAY, 19TH SEPT.:—MORNING, 9 TO 12.

(Candidates will answer the questions of the First Year Entrance paper and also the following:—

9. Write etymological notes on forlorn, alms, Witenagemot, manhood newt, pagan, alchemy, bask, Monday, island.

10. Mention other English words cognate with captive, fashion, feat blaspheme, hotel, treason, potion, fragile, air, defeat.

11. Illustrate the uses of *the*, *an* and *self* in modern English.

12. State and illustrate Grimm's and Verner's laws.

13. Trace as fully as you can the history of the inflexions of the third personal pronoun, singular and plural.

14. Correct or justify, with care, the following expressions:—

(*a*) Walking across the room, my purse fell out of my pocket.

(*b*) These sort of things annoy me very much.

(*c*) The captain could not distinguish between the red and green light.

(*d*) The Amazon is larger than all the rivers of the eastern and of the western hemispheres.

(*e*) It is I your master who commands you.

(*f*) Between you and I, he is wrong.

(*g*) Who do you believe he is?

(*h*) Either he or I are wrong.

(*i*) Twice two is four.

(*j*) His skill in fencing and boxing are well known.

(*k*) I meant to have written.

(*l*) Is he as tall as me?

FIRST YEAR EXHIBITION EXAMINATIONS.

ENGLISH COMPOSITION.

Write an essay of not less than three pages on any *one* of the following subjects:—

(*a*) Shakspere's insight into human character, as illustrated in King Richard II.

(*b*) Scottish patriotism; *or*, Scott's idea of a Hero.

(*c*) Milton's reverence for beautiful and holy things, as shewn in his earlier poems.

FIRST YEAR EXHIBITION EXAMINATIONS.

ENGLISH LITERATURE.

SHAKSPERE, *Richard II.*; SCOTT, *Lady of the Lake* (two hours).

Candidates will take the First Year Entrance paper on those subjects.

MILTON, *L'Allegro and other short poems.*

C.

1. Give, with dates, the three periods of Milton's literary life.

2. Give in tabular form an analysis of L'Allegro and Il Penseroso. From each portion of L'Allegro quote a line, and from each portion of Il Penseroso select an allusion and explain it.

3. State with precision why Arcades was written. Indicate its construction. Show that the piece justifies its title.

4. State, with precision, what occasioned the writing of Lycidas. Show that it is both pastoral and non-pastoral. Explain the following allusions, —Mona high, Camus, Sicilian Muse, Bellerus old. Quote the passage referring to the flowers. Give, in a short paragraph, your impressions of Lycidas.

5. Classify in the way you think explanatory of their character such sonnets as are given in the volume prescribed.

EUROPEAN HISTORY.

MONDAY, SEPT. 19TH:—3.30 TO 5 P. M.

The questions are very general, and will invite long answers if the candidate is familiar with the subject. On that account he is warned so to allot his time that he can write something on each question.

1. Explain how the Roman world was divided into East and West. Give details if possible of the various divisions and reunions of the fourth century, and mention any results of the cleavage which are still observable.

2. What do you know of the Frankish race and its leaders ?

3. Indicate the position of Germany in Europe during the Middle Ages, and dwell especially on its relations with Italy.

4. Follow out the rivalry of Austria and Prussia in Germany.

5. Estimate the causes and consequences of the French Revolution, including the Napoleonic Wars in the second part of your answer.

BOURSES ET PRIX.

DEUXIÈME ANNÉE.

LE 20 SEPTEMBRE 1898, DE 9 HEURES A MIDI.

1. Reproduire l'anecdote suivante :

2. Indiquer l'emploi de l'imparfait.

3. Dire, sous forme de lettre à un ami, comment vous avez passé les vacances.

4. Faire (1) le portrait de dom Griffi (Un Saint). (2) Un résumé de la Grève des Forgerons. (3) Un tableau de la Cour de François I, d'après le Roi s'amuse.

5. Dictée.

6. Examen Oral.

FRENCH.

ENTRANCE.

SEPTEMBER.

1. Traduisez en français :

But if the United States is essential to England, England is essential to the United States, in the face of the enemies who fear and hate us, and who, but for fear, would already have fleets upon our shores. More than this, the prosperity of England is our prosperity. England is our best, almost our only certain, market. She is the chief vent for our surplus production, and anything which cripples her purchasing power must react on us. For years past, she has been losing her commanding industrial position. Her most lucrative trade to-day lies with the Far East ; and if she is shut out there, her resources will be seriously impaired, and the money she no longer earns cannot be spent for food.

The Forum.

2. Traduisez en anglais :

Lors de l'affaire de Quiberon, mon père commandait un détachement de soldats de marine. A peine débarqué, il fut atteint d'une balle en pleine poitrine, et allait être pris par les républicains, lorsqu'un gentilhomme français, avec qui il s'était lié pendant la traversée le chargea sur ses épaules, et le porta jusqu'aux embarcations anglaises. Peu de temps après son retour en Angleterre, mon père mourut de sa blessure. Bien que je fusse tout enfant, il m'avait fait promettre de ne rien négliger pour me rencontrer plus tard avec celui qui lui avait sauvé la vie. A plusieurs reprises j'ai inutilement cherché à savoir ce que ce gentilhomme était devenu, lorsque tout dernièrement, j'ai appris que vous existiez et que vous étiez son petit-fils. Je vous écris donc pour faire votre connaissance

3. Indiquez la différence entre *ce* et *se*, *ces* et *ses*, *cet* et *cette*, *ciels* et *cieux*, *aïeux* et *aïeuls*, *travails* et *travaux*, *en* et *dans*.

4. Quelles remarques avez-vous à faire sur l'orthographe des verbes terminés à l'infinitif par : *cer*, *ger*, *eler*, *eter* ?

5. Conjuguez les temps primitifs des verbes suivants : *haïr*, *venir*, *aller*, *voir*, *rendre*.

6. Indiquez quatre cas de l'emploi du subjonctif et citez un exemple pour chaque cas.

7. Rendez en français :

The red rose which you have ; the white flower of which you speak. My grandfather of whom you are thinking. What he says is true. The man whose wife is sick ; the men whose sons have arrived. The king in whose palace I have been. He whom we heard is gone.

8. Mettez au pluriel les mots suivants et indiquez la règle et les exceptions, s'il y en a, qui se rapportent à chaque cas : noix, cheval, enfant clou, souris, cheveu, bétail, bleu, anneau, chef-d'œuvre, essuie-main, chou fleur.

FRENCH.

FIRST YEAR EXHIBITION.

SEPTEMBER, 1898.

1. Traduisez en français :

But if the United States is essential to England, England is essential to the United States, in the face of the enemies who fear and hate us, and who but for her would already have fleets upon our shores. More than this, the prosperity of England is our prosperity. England is our best, almost our only certain, market. She is the chief vent for our surplus

production; and anything which cripples her purchasing power must react on us. For years past, she has been losing her commanding industrial position. Her most lucrative trade to-day lies with the Far East; and if she is shut out there, her resources will be seriously impaired, and the money she no longer earns cannot be spent for food.

The Forum.

2. (*a*) Indiquez les bizarreries (oddities) et les défauts de caractère de *M. Perrichon.* (*b*) Quelle est la cause des difficultés qui surviennent entre *M. Perrichon* et *le Commandant Mathieu?* (*c*) Comment *Armand* et *Daniel* s'y prennent-ils chacun pour gagner l'estime de *M. Perrichon?*

3. Traduisez en anglais :

(*a*) *Madame P.*—Il est très bien, ce jeune homme!... Mais que fait ton père? les jambes me rentrent dans le corps!

Majorin.—Je ne me suis pas trompé, ce train ne part que dans une heure.

Henriette.—Tiens! Monsieur Majorin!

Majorin.—Enfin! les voici!

Madame P.—Vous! comment n'êtes-vous pas à votre bureau?

Majorin.—J'ai demandé un congé, belle dame; je ne voulais pas vous laisser partir sans vous faire mes adieux!

Mad. P.—Comment! c'est pour cela que vous êtes venu! ah! que c'est aimable!

(*b*) Perrichon, *à part.*—Il n'y a pas à dire... j'ai fait des excuses! moi dont on verra le portrait au Musée... Mais à qui la faute? à ce M. Armand!

Armand, *à part, au fond.*—Pauvre homme! je ne sais que lui dire.

Perrichon, *à part.*—Ah! ça, est-ce qu'il ne va pas s'en aller? Il a peut-être encore quelque service à me rendre... Ils sont jolis, ses services!

Armand.—M. P.!

Perrichon.—Monsieur?

Armand.—Hier, en vous quittant, je suis allé chez mon ami, l'employé à l'administration des douanes ... Je lui ai parlé de votre affaire.

Perrichon, sèchement.—Vous êtes trop bon.

Armand.—C'est arrangé!... On ne donnera pas suite au procès. Seulement vous écrirez au douanier quelques mots de regrets.

Perrichon, éclatant.—C'est ça! des excuses! encore des excuses ... De quoi vous mêlez-vous à la fin? Est-ce que vous ne perdrez pas l'habitude de vous fourrer chaque instant dans ma vie?

4. Ecrivez une appréciation d'une centaine de mots sur l'ouvrage "Histoire d'une bouchée de pain."

5. Quelles sont les règles du participe passé. (*a*) Conjugué avec l'auxiliaire *avoir.* (*b*) Conjugué sans auxiliaire. (*c*) Conjugué avec l'auxiliaire *être.*

6. Indiquez quatre cas de l'emploi de subjonctif et citez un exemple pour chaque cas.

7. Quelles remarques avez-vous à faire sur l'orthographe des verbes terminés à l'infinitif par : *cer*, *ger*, *eler*, *eter* ?

8. Conjuguez les temps primitifs des verbes suivants : *haïr*, *venir*, *aller*, *voir*, *rendre*.

ENTRANCE EXAMINATIONS.

BOTANY.

SEPTEMBER 16TH :—9 TO 12 A.M.

1. Describe fully the characteristics of a Dicotyledenous plant.

2. Give an account of the methods of reproduction in a typical Angiosperm.

3. Discuss fully the characteristic features of a Gymnospermous plant.

4. Describe the method of reproduction in a fern, and show to what group of plants it belongs.

5. Give an outline of a classification of the Plant Kingdom.

6. State what you can respecting the nutrition of plants,—the nature and sources of plant food.

7. Give a brief account of the respiration of plants.

8. State what you can as to the nature and mode of life of Saprophytes and Parasites.

9. Describe fully the specimen given.

N.B.—The examiner will supply any common wild flower, a specimen of which should be returned with the paper.

MATRICULATION EXAMINATIONS.

CHEMISTRY.

SEPTEMBER 19TH :—MORNING, 9 TO 12.

1. What three kinds of chemical action are there? Give an example of each.

2. How may pure water be prepared? Give a sketch of the apparatus that you would employ.

3. What solvents would you use if you wished to make solutions of (1) Gold, (2) Zinc, (3) Iodine, (4) Sulphur, (5) Phosphorus?

4. What are the probable changes that take place when Copper is dissolved in Nitric Acid? Give equations.

5. How is Nitric Acid made? What are its properties? How would you distinguish it from Hydrochloric Acid?

6. Explain the relations of salts to acids and bases, and the meaning of the term neutralization?

7. How is Sulphur Dioxide prepared? What are its properties and uses?

8. What do you understand by the statement that Carbon can do chemical work?

9. State briefly how you prepare the two Oxides of Carbon. Compare them as to their properties.

10. Give the formulæ of any five of the following compounds: Potassium Chlorate, Zinc Sulphate, Sodium Hydroxide, Marsh Gas, Sodium Sulphite, Borax, Orthophosphoric Acid.

MATRICULATION EXAMINATION.

PHYSIOGRAPHY.

SEPTEMBER.

(*Answer any eight of the ten questions and not more.*)

1. Explain clearly the various reasons which cause us to believe that the interior of the Earth is in a highly heated condition.

2. Explain the terms *latitude* and *longitude*, illustrating your answer by sketches. What is the longitude of Greenwich? What do you understand by *Isothermal lines?*

3. Explain the cause of winds and the effect of the rotation of the earth upon their direction. What are *Trade Winds*, *Monsoons* and *Cyclones?*

4. Compare the relief of the surface of the ocean bed with that of the continents.

5. Describe the deposits resting upon bed of the deep ocean.

6. Describe a typical *Mountain Chain*, and contrast its structure with that of a typical *Volcano*. Give an example of each, that of the former taken from the Dominion of Canada. Are there any volcanoes in Canada?

7. Explain the origin of the stratified rocks of the earth's crust, and point out any part of the Dominion underlain by such roc

8. Describe the action of a river in modifying the surface of country. Give an example.

9. Describe a typical *Glacier,* and point out the work which it accomplishes. Compare it with a river.

10. Point out the influence of the elevation of a country upon its climate.

ENTRANCE EXAMINATION.

PHYSICS.

WEDNESDAY, SEPT. 21ST :—MORNING, 9 TO 10.30.

1. Show the meaning of the following terms by describing one experiment to illustrate each :—*Viscosity, Adhesion, Porosity, Elasticity, Crystallization.*

2. Describe and explain the action of the Common Suction Pump.

3. How would you prove experimentally that a body immersed in water is supported by a force equal to the weight of water displaced?

A stone weighs 3 ounces in air and 2.54 ounces in water. What is its specific gravity?

4. Two pendulums are 2 and 5 feet long respectively. How many swings will the first make while the second swings 4 times?

5. What principles are illustrated in (1) a pair of nutcrackers, (2) the use of a pole for balancing on a tight rope?

6. Given a mercury thermometer tube filled and closed; how would you proceed to graduate it on the Fahrenheit scale? What centigrade temperature corresponds to 62° Fahrenheit?

7. Explain the different ways in which heat can travel from one object to another, and show where each is employed in transferring heat from the blazing coals in the furnace of a hot water-house warming system to a person in one of the upper rooms.

SECOND YEAR EXHIBITION.

THURSDAY, SEPTEMBER 15TH :—MORNING, 9 TO 12.

GREEK BOOKS AND UNSEEN.

1. Translate :—Ὁ δὲ οὐ πρότερον ἔφη ἐρεῖν οὐδὲ πεύσεσθαι παρ' ἡμῶν, πρὶν ξενίων τῶν παρόντων μεταδοῦναι. Καὶ λαβὼν ἡμᾶς ἦγεν ἐπὶ τὴν οἰκίαν. Ἐπεποίητο δὲ αὐτάρκη καὶ στιβάδας ἐνῳκοδόμητο καὶ τἄλλα ἐξήρτιστο. Παραθεὶς δὲ ἡμῖν λάχανά τε καὶ ἀκρόδρυα καὶ ἰχθῦς, ἔτι δὲ καὶ οἶνον ἐγχέας, ἐπειδὴ ἱκανῶς ἐκορέσθημεν ἐπυνθάνετο ἃ ἐπεπόνθειμεν· κἀγὼ πάντα ἐξῆς διηγησάμην, τόν τε χειμῶνα καὶ τὰ ἐν τῇ νήσῳ καὶ τὸν ἐν τῷ ἀέρι πλοῦν καὶ τὸν πόλεμον καὶ ταλλα μεχρὶ τῆς ἐς τὸ κῆτος καταδύσεως. Ὁ δ' ὑπερθαυμάσας καὶ αὐτὸς ἐν μέρει τὰ καθ' αὑτὸν διεξῄει, λέγων 'τὸ μὲν γένος εἰμὶ ὦ ξένοι Κύπριος· ὁρμηθεὶς δὲ ἀπὸ τῆς πατρίδος κατ' ἐμπορίαν μετὰ παιδὸς ὃν ὁρᾶτε καὶ ἄλλων πολλῶν οἰκετῶν ἔπλεον ἐς Ἰταλίαν, ποικίλον φόρτον κομίζων ἐπὶ νεὼς μεγάλης, ἣν ἐπὶ στόματι τοῦ κήτους διαλελυμένην ἴσως ἑωράκατε.

2. Translate :—

Πολλοὺς μὲν ἤδη, κἀπὸ παντοίας χθονὸς
ξένους μολόντας οἶδ' ἐς Ἀδμήτου δόμους,
οἷς δεῖπνα προὔθηκ'. ἀλλὰ τοῦδ' οὔπω ξένου
κακίον' εἰς τήνδ' ἑστίαν ἐδεξάμην.
Ὃς πρῶτα μὲν, πενθοῦντα δεσπότην ὁρῶν,
εἰσῆλθε, κἀτόλμησ' ἀμείψασθαι πύλας·
ἔπειτα δ' οὔτι σωφρόνως ἐδέξατο
τὰ προστυχόντα ξένια, συμφορὰν μαθών·
ἀλλ' εἴ τι μὴ φέροιμεν, ὤτρυνεν φέρειν.
Ποτῆρα δ' ἐν χείρεσσι κίσσινον λαβὼν

πίνει μελαίνης μητρὸς εὔζωρον μέθυ
ἕως ἐθέρμην' αὐτὸν ἀμφιβᾶσα φλὸξ
οἴνου· στέφει δὲ κρᾶτα μυρσίνης κλάδοις,
ἄμουσ' ὑλακτῶν· δισσὰ δ' ἦν μέλη κλύειν·
ὁ μὲν γὰρ ᾖδε, τῶν ἐν Ἀδμήτου κακῶν
οὐδὲν προτιμῶν, οἰκέται δ' ἐκλάομεν
δέσποιναν· ὄμμα δ' οὐκ ἐδείκνυμεν ξένῳ
τέγγοντες· Ἄδμητος γὰρ ὧδ' ἐφίετο.

3. Translate :—

Εἰ δέ τις ὑμῶν, ὦ ἄνδρες Ἀθηναῖοι, τὸν Φίλιππον εὐτυχοῦντα ὁρῶν ταύτῃ φοβερὸν προσπολεμῆσαι νομίζει, σώφρονος μὲν ἀνθρώπου λογισμῷ χρῆται· μεγάλη γὰρ ῥοπή, μᾶλλον δὲ τὸ ὅλον ἡ τύχη παρὰ πάντ' ἐστὶ τὰ τῶν ἀνθρώπων πράγματα· οὐ μὴν ἀλλ' ἔγωγε, εἴ τις αἵρεσίν μοι δοίη, τὴν τῆς ἡμετέρας πόλεως τύχην ἂν ἑλοίμην, ἐθελόντων ἃ προσήκει ποιεῖν ὑμῶν αὐτῶν καὶ κατὰ μικρὸν, ἢ τὴν ἐκείνου· πολὺ γὰρ πλείους ἀφορμὰς εἰς τὸ τὴν παρὰ τῶν θεῶν εὔνοιαν ἔχειν ὁρῶ ἡμῖν ἐνούσας ἢ ἐκείνῳ. Ἀλλ', οἶμαι, καθήμεθα οὐδὲν ποιοῦντες· οὐκ ἔνι δ αὐτὸν ἀργοῦντα οὐδὲ τοῖς φίλοις ἐπιτάττειν ὑπὲρ αὐτοῦ τι ποιεῖν, μή τί γε δὴ τοῖς θεοῖς. Οὐ δὴ θαυμαστόν ἐστιν, εἰ στρατευόμενος καὶ πονῶν ἐκεῖνος αὐτὸς καὶ παρὼν ἐφ' ἅπασι καὶ μηδένα καιρὸν μηδ' ὥραν παραλείπων ἡμῶν μελλόντων καὶ ψηφιζομένων καὶ πυνθανομένων περιγίνεται.

4 (*a*) Enumerate the orators of the Attic Canon. (*b*) To what class of dramas does the Alcestis belong. (*c*) A short life of Lucian with the names of some of his principal works.

5. Translate :—

Ἤτοι ὁ μητρὶ φίλῃ Ἀλθαίῃ χωόμενος κῆρ,
κεῖτο παρὰ μνηστῇ ἀλόχῳ, καλῇ Κλεοπάτρῃ,

κούρῃ Μαρπήσσης καλλισφύρου Εὐηνίνης,
Ἴδεώ θ', ὃς κάρτιστος ἐπιχθονίων γένετ' ἀνδρῶν
τῶν τότε—καί ῥα ἄνακτος ἐναντίον εἵλετο τόξον
Φοίβου Ἀπόλλωνος, καλλισφύρου εἵνεκα νύμφης·
τὴν δὲ τότ' ἐν μεγάροισι πατὴρ καὶ πότνια μήτηρ
Ἀλκυόνην καλέεσκον ἐπώνυμον, οὕνεκ' ἄρ' αὐτῆς
μήτηρ, Ἀλκυόνος πολυπενθέος οἶτον χουσα,
κλαῖ', ὅτε μιν ἑκάεργος ἀνήρπασε Φοῖβος Ἀπόλλων
τῇ ὅγε παρκατέλεκτο, χόλον θυμαλγέα πέσσων,
ἐξ ἀρέων μητρὸς κεχολωμένος, ἥ ῥα θεοῖσιν
πόλλ' ἀχεουσ' ἠρᾶτο κασιγνήτοιο φόνοιο·
πολλὰ δὲ καὶ γαῖαν πολυφόρβην χερσὶν ἀλοία,
κικλήσκουσ' Ἀΐδην καὶ ἐπαινὴν Περσεφόνειαν,
πρόχνυ καθεζομένη, δεύοντο δὲ δάκρυσι κόλποι,
παιδὶ δόμεν θάνατον· τῆς δ' ἠεροφοῖτις Ἐριννὺς
ἔκλυεν ἐξ Ἐρέβεσφιν, ἀμείλιχον ἦτορ ἔχουσα·
τῶν δὲ τάχ' ἀμφὶ πύλας ὅμαδος καὶ δοῦπος ὀρώρει
πύργων βαλλομένων· τὸν δὲ λίσσοντο γέροντες
Αἰτωλῶν, πέμπον δὲ θεῶν ἱερῆας ἀρίστους,
ἐξελθεῖν καὶ ἀμῦναι, ὑποσχόμενοι μέγα δῶρον.

SECOND YEAR EXHIBITIONS.

GENERAL PAPER.

TUESDAY, SEPTEMBER 20TH:—4 TO 5.30 P.M.

1. Give as complete a list as you can of the modes of expressing *purpose* in Greek and Latin. Compare the two languages in this respect and mention any points in which Homeric Greek differs from Attic

2. What is meant by *attraction?* Explain, with examples, what are the most usual instances of its occurrence.

3. Compare the powers possessed by the Athenian βουλή with those of the Roman Senatus.

4. Explain the difference between οὐ and μή in ordinary prose usage.

5. Compare the effects of the Persian Wars on Greece, with those of the Carthagenian Wars on Rome.

6. In Latin *in* (expressing position) is used with the Ablative, so is *ab*; in Greek ἐν is used with the Dative, ἀπὸ with the Genitive: explain this.

7. Give some of the main points of contrast between Ancient and Modern Slavery.

8. "Good Poetry is always earlier than good Prose." Illustrate this in Greek, Latin and English.

SECOND YEAR EXHIBITIONS.

LATIN.

TRANSLATION AT SIGHT.

THURSDAY, SEPTEMBER 15TH:—2 TO 3 P. M.

(A.)

M. CICERO S. D. CN. PLANCIO.

SCR. ROMAE A. U. C. 708.

Accepi perbrevis tuas litteras, quibus id, quod scire cupiebam, cognoscere non potui, cognovi autem id, quod mihi dubium non fuit. Nam quam fortiter ferres communis miserias, non intellexi; quam me amares, facile perspexi: sed hoc scieram; illud si scissem, ad id meas litteras accommodavissem. Sed tamen etsi antea scripsi, quae existimavi scribi oportere, tamen hoc tempore breviter *te* commonendum putavi, ne quo *in* periculo te proprio existimares esse; in magno omnes, sed tamen in communi sumus. Qua re non debes aut propriam fortunam et praecipuam postulare aut communen recusare. Quapropter eo animo simus inter nos, quo semper fuimus; quod de te praestare possum.

(B.)

Nisus erat portae custos, acerrimus armis,
Hyrtacides comitem Aeneae quem miserat Ida
venatrix iaculo celerem levibusque sagittis;
it iuxta comes Euryalus, quo pulchrior alter
non fuit Aeneadum Troiana neque induit arma,
ora puer prima signans intonsa iuventa.
His amor unus erat, pariterque in bella ruebant:
tum quoque communi portam statione tenebant.
Nisus ait: 'Dine hunc ardorem mentibus addunt,
Euryale, an sua cuique deus fit dira cupido?
Aut pugnam aut aliquid iamdudum invadere magnum
mens agitat mihi nec placida contenta quietest.
Cernis, quae Rutulos habeat fiducia rerum.

SECOND YEAR EXHIBITIONS.

LATIN.

TRANSLATION FROM PRESCRIBED BOOKS.

THURSDAY, SEPTEMBER 15TH :—3 TO 5 P.M.

(*A*) VIRGIL GEORGICS, BK. I.

Nec minus ex imbri soles et aperta serena
Prospicere et certis poteris cognoscere signis :
Nam neque tum stellis acies obtunsa videtur,
Nec fratris radiis obnoxia surgere Luna,
Tenuia nec lanae per caelum vellera ferri ;
Non tepidum ad solem pennas in litore pandunt
Dilectae Thetidi alcyones, non ore solutos
Inmundi meminere sues iactare maniplos.
At nebulae magis ima petunt campoque recumbunt,
Solis et occasum servans de culmine summo
Nequiquam seros exercet noctua cantus.
Adparet liquido sublimis in aere Nisus,
Et pro purpureo poenas dat Scylla capillo ;
Quacumque illa levem fugiens secat aethera pennis,
Ecce inimicus, atrox, magno stridore per auras
Insequitur Nisus ; qua se fert Nisus ad auras,
Illa levem fugiens raptim secat aethera pennis.

Write explanatory notes on : *soles, tenuia, dilectae, Thetidi alcyones, Nisus, and Scylla.*

(*B*) LIVY, BOOK XXI.

Carefully translate and show the grammatical construction of words printed in italics.

(*a*) Et haud ignotas *belli* artes inter sese, sed expertas primo Punico conserebant bello, et adeo varia fortuna belli ancepsque Mars fuit, ut propius *periculum* fuerint, qui vicerunt.

(*b*) Id quod *gerendis rebus* superesset, quieti datum.

(*c*) Sed ut locus procul muro satis aequus *agendis vineis* fuit, ita handquaquam prospere, post quam ad effectum operis ventum est, coeptis succedebat.

(*d*) *Fingerent* altiores Pyrenaei iugis : nullas profecto terras caelum contingere nec inexsuperabiles humano generi esse. Alpes quidem habitari, coli, gignere atque alere animantes ; pervias fauces esse exercitibus. Eos ipsos, quos cernant, legatos non pinnis sublime elatos transgressos.

(*e*) Secundum hanc pugnam, nondum *gnaris* eius, qui Messanae erant, Ti. Sempronius consul Messanam venit. *Ei* fretum intranti rex Hiero classem armatam ornatamque obviam duxit, transgressumque ex regia in praetoriam navem, gratulatus sosphitem cum exercitu et navibus advenissi, precatusque prosperum ac felicem in Siciliam transitum, statum deinde insulae et Carthaginiensium conata exposuit, pollicitusque est, quo animo priore bello populum Romanum iuvenis adiuvisset, eo senem adiuturum; frumentum vestimentaque sese legionibus consules sociisque gratis praebiturum; grande periculum Lilybaeo maritimisque civitatibus esse, et *quibusdam volentibus* novas res fore.

(*C*) HORACE, ODES, BK. IV.

(*a*) Non possidentem multa vocaveris
recte beatum : rectius occupat
nomen beati, qui deorum
muneribus sapienter uti

duramque callet pauperiem pati
peiusque veto flagitium timet,
non ille pro caris amicis
aut patria timidus perire.

(*b*) Tua, Caesar, aetas
fruges et agris rettulit uberes
et signa nostro restituit Iovi
derepta Parthorum superbis
postibus et vacuum duellis.

Ianum Quirini clausit et ordinem
rectum evaganti frena licentiae
iniecit emovitque culpas
et veteres revocavit artis,

per quas Latinum nomen et Italae
crevere vires famaque et imperi
porrecta maiestas ad ortus
solis ab Hesperio cubili.

Describe the metres in which these stanzas are written, and scan one stanza.

SECOND YEAR EXHIBITIONS.

LATIN PROSE COMPOSITION.

TUESDAY, SEPTEMBER 20TH :—3 TO 4 P.M.

The Carthaginians had now reached the highest point of the mountains, they encamped on a large plateau where they could rest for some days. But it was a cold and desolate place, and not one where they could remain long, especially as winter was approaching. Many had been left behind on the march, overcome with want and hardship; and the cold was terrible to men who came from Spain and Africa. But Hannibal encouraged them, and pointed out that from this place the road led downwards, and that it would soon lead them to a country where they would find friends. "There lies Italy," cried he; "yonder is the way to Rome."

SECOND YEAR EXHIBITIONS.

EUCLID—ALGEBRA—TRIGONOMETRY.

FRIDAY, SEPTEMBER 16TH :—MORNING, 9 TO 12.

1. Similar triangles are to one another in the duplicate ratio of their homologous sides.

2. In any triangle the rectangle contained by two sides is equal to the rectangle contained by the diameter of the circumscribed circle and the perpendicular upon the third side.

3. Inscribe a regular pentagon in a circle.

4. The square on the side of an equilateral triangle inscribed in a circle is equal to three times the square on the radius of the circle.

5. Solve the equations:

(1) $\frac{6x-8}{2x+1} - \frac{2x+38}{x+12} = 81.$

(2) $\frac{x+1}{y-1} - \frac{x-1}{y} = \frac{6}{y}; \quad x-y=1.$

(3) $\sqrt{9x+4} + \sqrt{9x-1} = 3.$

6. Solve the equations:

(1) $\frac{2x-3}{3x-5} + \frac{3x-5}{2x-3} = \frac{5}{2}$

(2) $\frac{x}{a} + \frac{y}{b} = 1; \quad \frac{x^2}{a^2} + \frac{y^2}{b^2} = 1.$

7. Simplify

$$\frac{1}{(a-b)(a-c)} + \frac{1}{(b-a)(b-c)} + \frac{1}{(c-a)(c-b)},$$

and $\sqrt{10} \times \sqrt[3]{100} \times \sqrt[4]{1000} \times \sqrt[12]{10}$

8. The side of a square is 110 inches long; find the length and breadth of a rectangle which shall have its perimeter 4 inches longer than that of the square, and its area 4 square inches less than that of the square.

9. Prove:—(*a*) $\cos(A + B) = \cos A \cos B - \sin A \sin B$

(*b*) $\cos B - \cos A = 2 \sin \frac{A+B}{2} \sin \frac{A-B}{2}$

10. Prove that in any triangle

(1) $\frac{a+b}{c} = \frac{\cos \frac{A-B}{2}}{\cos \frac{A+B}{2}}$

(2) $\cos A = \frac{b^2 + c^2 - a^2}{2bc}$

(3) $\cos \frac{1}{2} A = \sqrt{\frac{s(s-a)}{bc}}$ where $s = \frac{a+b+c}{2}$

11. Investigate a formulae for converting an angle given in radians into degrees. minutes and seconds.

12. Express all the trigonometrical ratios in the terms of the sine.

SECOND YEAR EXHIBITIONS.

GEOMETRY.

FRIDAY, SEPTEMBER 16TH:—AFTERNOON 2 TO 5.

Write the answers in separate books marked A and B respectively, to correspond to the questions.)

A

1. Any four fixed tangents to a circle are cut by any fifth variable tangent in four points whose anharmonic ratio is constant.

2. If two triangles be such that the sides of the one are the polars of the vertices of the other, they are in perspective.

3. Prove that Pascal's theorem for a hexagon inscribed in a circle holds also for six points, which are three by three, on two right lines.

4. Two circles being given, it is required to describe a system of circles co-axal with them.

5. If two circles touch two others, the radical axis of either pair passes through a centre of similitude of the other pair.

6. If from any point perpendiculars be let fall on the sides of a regular polygon of n sides, their sum is equal to n times the radius of the inscribed circle.

B.

7. The rectangle contained by the perpendiculars from any point O in the circumference of a circle on two tangents A C and B C is equal to the square of the perpendicular from the same point upon the chord of contact A. B.

8. Through one of the points of intersection of two given circles to draw a line, the sum of whose segments intercepted by the circles shall be a maximum.

9. If A, B, C, D, &c., be any system of N points, O the centre of mean position, P any other point, the sum of the squares of the distances of the points A, B, C, D, &c., from P exceeds the sum of the squares of the distances from O by N O P

10. Any line cutting a circle and passing through a fixed point, is cut harmonically by the circle, the point and the polar of the point.

11. Any two circles can be inverted into themselves.

12. If a triangle given in species have one angular point fixed, and if a second angular point moves along a given line, the third will also move along a given line.

SECOND YEAR EXHIBITIONS.

THEORY OF EQUATIONS—ALGEBRA.

WEDNESDAY, SEPTEMBER 21ST:—MORNING, 9 TO 12.

(*Write the answers in separate books marked A and B respectively, to correspond to the questions.*)

A

1. A multiple root of the order m of the equation $f(x) = 0$ is a multiple root of the order $m - 1$ of the first derived equation $f(x) = 0$.

2. If a be an imaginary root of $x^n - 1 = 0$, then a^m will also be a root, m being any integer.

3. If a, b, c, be the roots of the cubic

$$x^3 - px^2 + qx - r = 0$$

find the equation whose roots $ab + ac$, $ab + bc$, $bc + ac$.

4. Transform the equation

$$x^3 - 4x_3 - 18x^2 - 3x + 2 = 0$$

into one which shall want the third term.

5. The equation

$$x^4 + 4x^3 - 2x^2 - 12x + 9 = 0$$

has two pair of equal roots, find them.

6. If an equation involve only even powers of x, and if all the coefficients have positive signs, it cannot have a real root.

B.

7. If an equation $f(x) = 0$, whose coefficients are all real quantities have for a root the imaginary expression $\alpha + \beta\sqrt{-1}$, it must also have for a root the conjugate expression $\alpha - \beta\sqrt{-1}$.

8. Find the equation of squared difference of the cubic

$$x^3 - 7x + 6 = 0.$$

9. Solve the equation $x^5 - 1 = 0$.

10. Any number which renders positive the polynomial $f(x)$ and all its derived functions $f_1(x)$, $f_2(x)$, $f_3(x)$, ... $f_n(x)$ is a superior limit of the positive roots of the equation $f(x) = 0$.

11. Expand to four terms the expression

$$\left(1 + \frac{x}{3}\right)^{-3}$$

12. Break up into partial fractions

$$\frac{23x - 11x^2}{(2x - 1)(9 - x^2)}$$

SECOND YEAR EXHIBITIONS.

CHURCH: "*The Beginning of the Middle Ages.*"

MONDAY, SEPTEMBER 19:—3 TO 4.30 P.M.

1. Give the main events of Gothic history, including both East and West branches.

2. Discuss the alliance of the Frankish race and its leaders with the Papacy.

3. Present the salient features of Justinian's reign.

4. Write what you know of Louis the Pious and his sons.

5. What does Church say about the state of Scandinavian and Slavonic nations in the 9th and 10th centuries?

SECOND YEAR EXHIBITION EXAMINATIONS.

ENGLISH LANGUAGE.

TRENCH:—*On the Study of Words.*

1. Explain and illustrate (with original examples, if possible) what Trench means by "poetry contained in words."

2. Make notes on:—tawdry, virtuoso, gypsy, alligator, Leonine verses, feather and plume, opposite and contrary, league.

3. Give four examples, supplied by Trench, of proper names becoming general or common; and discuss each case separately. Add three later or contemporary, examples of your own selection.

4. Discuss the degradation and the elevation of meaning in words, and give two examples of each.

5. What is meant by *cant* and *slang*, respectively? Discuss, on your own grounds, the question of the employment of slang.

SECOND YEAR EXHIBITION EXAMINATIONS.

ENGLISH COMPOSITION.

Write an essay of not less than three pages on any *one* of the following subjects:—

(*a*). The Character of Una.
(*b*). Tennyson's Devotion to his Country.
(*c*). The Monastic Ideal.

SECOND YEAR EXHIBITION EXAMINATIONS.

ENGLISH LITERATURE.

SPENSER, *Faerie Queene*, Book I.; TENNYSON, *Selected Poems*.

A.

1. Give the date of the publication of the first part of the Faerie Queene.

2. State in what way Tasso, an Historiographer, Acrasia, Sir Guyon and Phœbe are alluded to in the prefatory Letter.

3. Name in order the combats in which the Red Cross Knight is engaged. State the result of each, and give the allegory when necessary.

4. Describe Arthur and Heavenly Contemplation.

5. Write on the development of Romance poetry.

6. Write on allegory in our literature before the time of Spenser or on the influence of Spenser on English and Scotch poetry.

7. Write on Spenser's language, giving details rather than general characteristics.

B.

1. Mention and briefly illustrate the chief characteristics of Tennyson's poetry.

2. Refer the following quotations to their sources, and give explanations when necessary:

(*a*) Sole star of all that place and time

(*b*) God in his mercy lend her grace

(*c*) Self-reverence, self-knowledge, self-control,
These three alone lead life to sovereign power

(*d*) Death is the end of life; ah, why
Should life all labor be?

(*e*) "Glory to God" she sang and past afar

(*f*) It may be we shall touch the Happy Isles

(*g*) A white-haired shadow roaming like a dream

(*h*) the cross of gold
That shines over city and river.

(*i*) Three angels bear the Holy Grail

(*j*) And babbled for the golden seal.

Where is the Spenserian stanza found in the volume?

3. Give an outline of the Dream of Fair Women.

4. Write a paragraph on the development of the Arthur-saga. Quote or give the substance of a striking passage in the Morte D'Arthur.

Write explanatory notes on Lyonnesse, Camelot, Merlin, Avilion, those three Queens.

5. Give an outline of the story of Dora.

6. Tell the story of the fight of the Revenge. Mention Elizabethan narratives of the fight, and say to which Tennyson is chiefly indebted. Prove his indebtedness.

EXAMEN D'ENTRÉE.

DEUXIÈME ANNÉE.

LE 20 SEPTEMBRE, DE 9 HEURES A MIDI.

1. Reproduire l'anecdote suivante :

2. Indiquer l'emploi (1) de l'*imparfait*, (2) du mot *si*, (3) du *subjonctif*. Exemples.

3. Dire sous forme de lettre à un ami, comment vous avez passé les vacances. (Environ 150 mots).

4. Faire l'analyse logique et grammaticale de la phrase :
Que celui qui a donné se taise ; que celui qui a reçu parle. (Maxime espagnole).

5. Dictée.

6. Examen Oral.

SCHOLARSHIP EXAMINATION.

THURSDAY, SEPTEMBER 15TH :—MORNING, 9 TO 12.

A.—PLATO, PHAEDO.

1. Translate without notes :—

ἔστι δ' ἄρα ἡ πυρεία οὐχ ὡς ὁ Αἰσχύλου Τήλεφος λέγει ἐκεῖνος μὲν γὰρ ἁπλῆν οἶμόν φησιν εἰς Ἅιδου φέρειν, ἡ δ' οὔτε ἁπλῆ οὔτε μία φαίνεταί μοι εἶναι. οὐδὲ γὰρ ἂν ἡγεμόνων ἔδει· οὐ γάρ πού τις ἂν διαμάρτοι οὐδαμόσε μιᾶς

ὁδοῦ οὔσης, νῦν δὲ ἔοικε σχίσεις τε καὶ περιόδους πολλὰς ἔχειν· ἀπὸ τῶν ὁσίων τε καὶ νομίμων τῶν ἐνθάδε τεκμαιρόμενος λέγω. ἡ μὲν οὖν κοσμία τε καὶ φρόνιμος ψυχὴ ἕπεταί τε καὶ οὐκ ἀγνοεῖ τὰ παρόντα· ἡ δὲ ἐπιθυμητικῶς τοῦ σώματος ἔχουσα, ὅπερ ἐν τῷ ἔμπροσθεν εἶπον, περὶ ἐκεῖνο πολὺν χρόνον ἐπτοημένη καὶ περὶ τὸν ὁρατὸν τόπον, πολλὰ ἀντιτείνουσα καὶ πολλὰ παθοῦσα, βίᾳ καὶ μόγις ὑτὸ τοῦ προστεταγμένου δαίμονος οἴχεται ἀγομένη. (107E)

2. Translate and comment on :—

(*a*) κινδυνεύει τοι ὥσπερ ἀτραπός τις ἐκφέρειν ἡμᾶς μετὰ τοῦ λόγου ἐν τῇ σκέψει, ὅτι, ἕως ἂν τὸ σῶμα ἔχωμεν καὶ συμπεφυρμένη ᾖ ἡμῶν ἡ ψυχὴ μετὰ τοῦ τοιούτου κακοῦ, οὐ μήποτε κτησώμεθαι ἱκανῶς οὗ ἐπιθυμοῦμεν.

(*b*) πρὸ τοῦ ἄρα ἄρξασθαι ἡμᾶς ὁρᾶν καὶ ἀκούειν καὶ τἆλλα αἰσθάνεσθαι τυχεῖν ἔδει που ἐληφότας ἐπιστήμην αὐτοῦ τοῦ ἴσου, ὅτι ἔστιν, εἰ ἐμελλομεν τὰ ἐκ τῶν αἰσθήσεων ἴσα ἐκεῖσε ἀνοίσειν, ὅτι προθυμεῖται μὲν πάντα τοιαῦτα εἶναι οἷον ἐκεῖνο, ἔστι δὲ αὐτοῦ φαυλότερα.

Explain the point which Socrates is making.

(*c*) εἰ οὖν τυγχάνει ἡ ψυχὴ οὖσα ἁρμονία τις, δῆλον ὅτι, ὅταν χαλασθῇ τὸ σῶμα ἡμῶν ἀμέτρως ἢ ἐπιταθῇ ὑπὸ νόσων καὶ ἄλλων κακῶν, τὴν μὲν ψυχὴν ἀνάγκη εὐθὺς ὑπάρχει ἀπολωλέναι, καίπερ οὖσαν θειοτάτην, ὥσπερ καὶ αἱ ἄλλαι ἁρμονίαι αἵ τε ἐν τοῖς φθόγγοις καὶ ἐν τοῖς τῶν δημιουργῶν ἔργοις πᾶσι, τὰ δὲ λείψανα τοῦ σώματος ἑκάστου πολὺν χρόνον παραμένειν, ἕως ἂν ἢ κατακαυθῇ ἢ κατασαπῇ.

(*d*) ἐμὲ δὲ νῦν ἤδη καλεῖ, φαίη ἂν ἀνὴρ τραγικός ἡ εἱμαρμένη.

(*e*) εἰς μακάρων δή τινας εὐδαιμονίας.

B—THUCYDIDES VI.

1. Translate :—

ὡς οὖν ἐν τάχει παρεσομένων, ὁρᾶτε ἀπὸ τῶν ὑπαρχόντων ὅτῳ τρόπῳ κάλλιστα ἀμυνεῖσθε αὐτούς. καὶ μήτε καταφρονήσαντες ἄφρακτοι ληφθήσεσθε, μήτε ἀπιστήσαντες τοῦ ξύμπαντος ἀμελήσετε· εἰ δέ τῳ καὶ πιστὰ, τὴν τόλμαν αὐτῶν καὶ δύναμιν μὴ ἐκπλαγῇ. οὔτε γὰρ βλάπτειν ἡμᾶς πλείω οἷοί τε ἔσονται ἢ πάσχειν, οὔθ' ὅτι μεγάλῳ στόλῳ ἐπέρχονται, ἀνωφελεῖς, ἀλλὰ πρός τε τοὺς ἄλλους Σικελιώτας πολὺ ἄμεινον (μᾶλλον γὰρ ἐθελήσουσιν ἐκ πλαγέντες ἡμῖν ξυμμαχεῖν), καὶ ἢν ἄρα ἢ κατεργασώμεθα αὐτούς, ἢ ἀπράκτους ὧν ἐφίενται ἀπώσωμεν (οὐ γὰρ δὴ μὴ τύχωσί γε ὧν προσδέχονται φοβοῦμαι), κάλλιστον δὴ ἔργων ἡμῖν ξυμβήσεται, καὶ οὐκ ἀνέλπιστον ἔμοιγε, (xxxiii-4).

2. Translate and comment on :—

(*a*) καὶ οὐκ ἄχρηστος ἦδ' ἡ ἄνοια (v.l. διάνοια), ὃς ἂν τοῖς ἰδίοις τέλεσι μὴ ἑαυτὸν μόνον ἀλλὰ καὶ τὴν πόλιν ὠφελῇ· οὐδέ γε ἄδικον, ἐφ' ἑαυτῷ μέγα φρονοῦντα μὴ ἴσον εἶναι, ἐπεὶ καὶ ὁ κακῶς πράσσων πρὸς οὐδένα τῆς ξυμφορᾶς ἰσομοιρεῖ.

(*b*) ἀλλ' ἤτοι μαθόντες γε ἢ μεταγνόντες, τὸ τῆς πόλεως ξύμπασι κοινὸν αὔξετε, ἡγησάμενοι τοῦτο μὲν ἂν καὶ ἴσον καὶ πλεον οἱ ἀγαθοὶ ὑμῶν ἥπερ τὸ τῆς πόλεως πλῆθος μετασχεῖν, εἰ δ' ἄλλα βουλήσεσθε, καὶ τοῦ παντὸς κινδυνεῦσαι στερηθῆναι. καὶ τῶν τοιῶνδε ἀγγελιῶν, ὡς πρὸς αἰσθομένους καὶ μὴ ἐπιτρέψοντας, ἀπαλλάγητε.

(*c*) οὐδὲ γὰρ τὴν ἄλλην ἀρχὴν ἐπαχθὴς ἦν ἐς τοὺς πολλοὺς, ἀλλ' ἀνεπιφθόνως κατεστήσατο· καὶ ἐπετήδευσαν ἐπὶ πλεῖστον δὴ τύραννοι οὗτοι ἀρετὴν καὶ ξύνεσιν, καὶ

'Αθηναίους εἰκοστὴν μόνον πρασσόμενοι τῶν γιγνομένων τήν τε πόλιν αὐτῶν καλῶς διεκόσμησαν καὶ τοὺς πολέμους διέφερον καὶ ἐς τὰ ἱερὰ ἔθυον.

(*d*) τὸ δὲ ὑπήκοον τῶν ξυμμάχων μέγιστον μὲν περὶ τῆς αὐτίκα ἀνελπίστου σωτηρίας, ἢν μὴ κρατῶσι, τὸ πρόθυμον εἶχον, ἔπειτα δὲ ἐν παρέργῳ καὶ εἴ τι ἄλλο ξυγκαταστρεψαμένοις ῥᾷον αὐτοῖς ὑπακούσεται.

(*e*) ἐν παντὶ γὰρ πᾶς χωρίῳ, καὶ ᾧ μὴ ὑπάρχομεν, ὅ τε οἰόμενος ἀδικήσεσθαι καὶ ὁ ἐπιβουλεύων, διὰ τὸ ἑτοίμην ὑπεῖναι ἐλπίδα τῷ μὲν ἀντιτυχεῖν ἐπικουρίας ἀφ' ἡμῶν, τῷ δὲ, εἰ ἥξομεν, μὴ ἀδεεῖς (Mss. ἀδεεῖς) εἶναι κινδυνεύειν, ἀμφότεροι ἀναγκάζονται ὁ μὲν ἄκων σωφρονεῖν, ὁ δὲ ἀπραγμόνως σῴζεσθαι.

(*f*) αὐτοὶ δὲ περὶ ὄρθρον καταβάντες ἀπὸ τῶν 'Επιπολῶν ἐς τὸ ὁμαλὸν, καὶ διὰ τοῦ ἕλους, ἢ πηλῶδες ἦν καὶ στεριφώτατον, θύρας καὶ ξύλα πλατέα ἐπιθέντες καὶ ἐπ' αὐτῶν διαβαδίσαντες, αἱροῦσιν ἅμα ἕῳ τό τε σταύρωμα πλὴν ὀλίγου καὶ τὴν τάφρον.

3. Give a summary (with plan) of the Athenian operations at Syracuse narrated in this Book.

C.—SOPHOCLES, ANTIGONE :—

Translate with notes :—

(*a*) ἀντιτύπᾳ δ' ἐπὶ γᾷ πέσε τανταλωθεὶς
πυρφόρος, ὃς τότε μαινομένᾳ ξὺν ὁρμᾷ
βακχεύων ἐπέπνει
ῥιπαῖς ἐχθίστων ἀνέμων.

(*b*) οὐκ οἶδ' ἐκεῖ γὰρ οὔτε του γενῆδος ἦν
πλῆγμ', οὐ δικέλλης ἐκβολή· στύφλος δὲ γῆ
καὶ χέρσος, ἀρρὼξ οὐδ' ἐπημαξευμένη
τροχοῖοιν ἀλλ' ἄσημος οὐργάτης τις ἦν.

(*c*) ἔκ τ' εὐκροτήτου χαλκέας ἄρδην πρόχου
χοαῖσι τρισπόνδοισι τὸν νέκον στέφει,

(*d*) καὶ συμμετίσχω καὶ φέρω τῆς αἰτίας.

(*e*) τεάν, Ζεῦ, δύνασιν τίς ἀνδρῶν ὑπερβασία κατάσχοι;
τὰν οὔθ' ὕπνος αἱρεῖ ποθ' ὁ πάντ' ἀγρεύων (Ms. παντογήρως),
οὔτε θεῶν ἄκματοι μῆνες, ἀγήρως δὲ χρόνῳ (Ms. ἀκάματοι)
δυνάστας κατέχεις Ὀλύμπου μαρμαρόεσσαν αἴγλαν.

(*f*) εἰς γὰρ παλαιὸν θᾶκον ὀρνιθοσκόπον
ἵζων, ἵν' ἦν μοι παντὸς οἰωνοῦ λιμήν,
ἀγνῶτ' ἀκούω φθόγγον ὀρνίθων, κακῷ
κλάζοντας οἴστρῳ καὶ βεβαρβαρωμένῳ·
καὶ σπῶντας ἐν χηλαῖσιν ἀλλήλους φοναῖς
ἔγνων· πτερῶν γὰρ ῥοῖβδος οὐκ ἄσημος ἦν.

(*g*) τὸν δ' ἀγρίοις ὄσσοισι παπτήνας ὁ παῖς,
πτύσας προσώπῳ κοὐδὲν ἀντειπών, ξίφους
ἕλκει διπλοῦς κνώδοντας· ἐκ δ' ὁρμωμένου
πατρὸς φυγαῖσιν ἤμπλακ'· εἶθ' ὁ δύσμορος
αὑτῷ χολωθεὶς ὥσπερ εἶχ', ἐπενταθεὶς
ἤρεισε πλευραῖς μέσσον ἔγχος. ἐς δ' ὑγρὸν
ἀγκῶν' ἔτ' ἔμφρων παρθένῳ προσπτυσσεται.

SCHOLARSHIP EXAMINATION.

FRIDAY, SEPT. 16TH:—AFTERNOON, 2 TO 5.

Translate into Greek:—

"Soldiers, if it were now necessary to tell you how often and with what pains the Russoi have endeavoured to injure us and at the same time benefit themselves, I should

be making a longer speech; but under the present circumstances I need only urge you to attack at once those who are and have always been our foes, those who will continue our foes in the future. Our army is not as large as theirs, it is true; but our courage is far greater and so is our intelligence, and we are confident that Heaven will give the victory to the cause of Justice and Freedom."

Translate into English :—

(1) Εἰ δέ τις ὑμῶν ὦ ἄνδρες Ἀθηναῖοι τὸν Φίλιππον ὁρῶν εὐτυχοῦντα, φοβερὸν εἶναι νομίζει καὶ δυσπολέμητον, σώφρονος μὲν ἀνδρὸς χρῆται προνοίᾳ· μεγάλη γὰρ ῥοπὴ, μᾶλλον δ' ὅλον ἡ τύχη πρὸς ἅπαντα τὰ τῶν ἀνθρώπων πράγματα· κατὰ πολλοὺς μέντοι τρόπους ἔλοιτ' ἄν τις οὐχ ἧττον τὴν ἡμετέραν εὐτυχίαν ἢ τὴν ἐκείνου. παρά τε γὰρ τῶν προγόνων ἐκ πλείονος χρόνου παρειλήφαμεν τὴν εὐδαιμονίαν, οὐ τούτου μόνον, ἀλλὰ συνελόντι φράσαι πάντων τῶν ἐν Μακεδονίᾳ βασιλευσάντων· κἀκεῖνοι μὲν Ἀθηναίοις φόρους ἤνεγκαν, ἡ δ' ἡμετέρα πόλις οὐδενί πω τῶν ἁπάντων.

([Dem.] πρὸς τὴν ἐπιστολήν §15, 16.)

(2) ὦ πᾶσιν ἀνθρώποισιν ἔχθιστοι βροτῶν
Σπάρτης ἔνοικοι, δόλια βουλευτήρια,
ψευδῶν ἄνακτες, μηχανορράφοι κακῶν,
ἑλικτὰ κοὐδὲν ὑγιὲς ἀλλὰ πᾶν πέριξ
φρονοῦντες, ἀδίκως εὐτυχεῖτ' ἀν' Ἑλλάδα.
ὄλοισθ'· ἐμοὶ δὲ θάνατος οὐχ οὕτω βαρὺς
ὡς σοὶ δέδοκται. κεῖνα γὰρ μ' ἀπώλεσεν
ὅθ' ἡ τάλαινα πόλις ἀναλώθη Φρυγῶν
πόσις θ' ὁ κλεινὸς, ὅς σε πολλάκις δορὶ
ναύτην ἔθηκεν ἀντὶ χερσαίου κακόν.

(Eur. Androm., 445-449, 453-457.)

THIRD YEAR SCHOLARSHIPS.

LATIN PROSE COMPOSITION AND TRANSLATION AT SIGHT.

THURSDAY, SEPTEMBER 15TH :—2 TO 5 P.M.

A.

Three days after the setting out of the troops from Rome the gloomy intelligence arrived that the enemy, after having utterly routed the Roman army on the 12th of March, were now in possession of the city of Corioli, and all the territory and other property of the allies. (*Or. Obl.*) "I am the only man," said the messenger, "who has survived the battle. The enemy, flushed with recent victory, are coming in, and must even now be not more than three miles from the city. So savage is their temper that I am sure no one however old and infirm will be spared." Having heard this, the Senate determined at once to send envoys to meet the enemy on their approach, with the intention of suing for peace.

B.

(*a*) Iniustitiae genera duo sunt: unum eorum, qui inferunt, alterum eorum, qui ab iis quibus infertur, si possunt, non propulsant iniuriam. Nam qui iniuste impetum in quempiam facit, aut ira aut aliqua perturbatione incitatus, is quasi manus afferre videtur socio: qui autem non defendit nec obsistit, si potest, iniuriae, tam est in vitio, quam si parentes aut amicos aut patriam deserat. Atque illae quidem iniuriae, quae nocendi causa de industria inferuntur, saepe a metu proficiscuntur; cum is, qu nocere alteri cogitat, timet ne, nisi id fecerit, ipse aliquo afficiatur incommodo. Maximam autem partem ad iniuriam faciendam aggrediuntur, ut adipiscantur ea, quae concupiverunt: in quo vitio latissime patet avaritia.

(*b*)
Baiano procul a lacu recede,
Piscator; fuge, ne nocens recedas.
Sacris piscibus hae natantur undae,
Qui norunt dominum manumque lambunt
Illam, qua nihil est in orbe maius.
Quid, quod nomen habent et ad magistri
Vocem quisque sui venit citatus?
Hoc quondam Libys impius profundo,
Dum praedam calamo tremente ducit,
Raptis luminibus repente caecus
Captum non potuit videre piscem,
Et nunc sacrilegos perosus hamos
Baianos sedet ad lacus rogator.
At tu, dum potes, innocens recede
Iactis simplicibus cibis in undas,
Et pisces venerare delicatos.

SCHOLARSHIP EXAMINATIONS.

LATIN.

FRIDAY, SEPTEMBER 16TH:—9 TO 12 A. M.

I. HORACE, EPISTLES, BK. I.

1. Translate:—

(*a*) O cives, quaerenda pecunia primum est;
virtus post nummos; haec Ianus summo ab imo
prodocet, haec recinunt iuvenes dictata senesque
laevo suspensi loculos tabulamque lacerto.

(*b*) Nos numeri sumus et fruges consumere nati,
sponsi Penelopae nebulones, Alcinoique
in cute curanda plus aequo operata inventus,
cui pulchrum fuit in medios dormire dies et
ad strepitum citharae cessatum ducere curam.

(*c*) 'Si pranderet holus patienter, regibus uti
nollet Aristippus.' 'Si sciret regibus uti,
fastidiret holus qui me notat.' Utrius horum
verba probes et facta doce, vel iunior audi
cur sit Aristippi potior sententia.

2. Write explanatory notes on: *Ianus summo ab imo, prodocet, suspensit loculos, sponsi Penelopae. Alcinoi, pranderet* (subjunctive), *fastidire* (derive.)

II. CICERO, PRO ROSCIO AMERINO.

3. Translate:—

Facis iniuriam, Chrysogone, si maiorem spem emptionis tuae in huius exitio ponis quam in eis rebus quas L. Lulla gessit. Quod si tibi causa nulla est cur hunc miserum tanta calamitate adfici velis, si tibi omnia sua praeter animam tradidit, nec sibi quicquam paternum ne monumenti quidem causa clam reservavit, per deos immortalis, quae ista tanta crudelitas est? Quae tam fera immanisque natura? Quis umquam praedo fuit tam nefarius, quis pirata tam barbarus, ut cum integram praedam sine sanguine harbere posset, cruenta spolia detrahere mallet?

4. Sketch the events which led to the prosecution of Roscius and his defence by Cicero.

III. Virgil, Aeneid, Bk. VI.

5. Translate— :

(*a*) Illae autem, paribus quas fulgere cernis in armis,
Concordes animae nunc, et dum nocte prementur,
Heu quantum inter se bellum, si lumina vitae
Attigerint, quantas acies stragemque ciebunt!
Aggeribus socer Alpinis atque arce Monoeci
Descendens; gener adversis instructus Eois.
Ne, pueri, ne tanta animis assuescite bella;
Neu patriae validas in viscera vertite vires.
Tuque prior, tu parce, genus qui ducis Olympo;
Proiice tela manu, sanguis meus.

(*b*) Talibus orabat dictis, arasque tenebat;
Cum sic orsa loqui vates: "Sate sanguine divum,
Tros Anchisiada, facilis descensus Averno;
Noctes atque dies patet atri ianua Ditis;
Sed revocare gradum superasque evadere ad auras,
Hoc opus, hic labor est. Pauci, quos aequus amavit
Iuppiter, aut ardens evexit ad aethera virtus,
Dis geniti potuere.

6. (*a*) From whose address is ext. (*a*) taken? What two rivals are referred to? Explain *arce Monoeci, adversis Eoïs.* (*b*) Give the grammatical construction of *sanguine, Averno, hic labor,* in extract (*b*). (*c*) Write out the scansion of the third and sixth lines of the second passage, marking the caesura.

IV. Sallust, Catiline.

7. Translate, and comment on the words printed in italics:

(*a*) Ni virtus fidesque vostra spectata *mihi forent,* nequiquam opportuna res cecidisset: spes magna, dominatio in manibus fussent: neque ego per ignaviam aut vana ingenia incerta pro certis captarem. Sed quia multis et magnis tempestatibus vos cognovi fortis fidosque mihi, es animus ausus est *maxumum* atque pulcherrumum facinus incipere, simul quia vobis eadem quae mihi bona malaque esse intellexi. Nam idem velle at que idem nolle, *ea* demum firma amicitia est.

(*b*) Sed confecto proelio, tum vero *cerneres* quanta audacia, quantaque animi vis fuisset in exercitu Catilinae. Nam fere quem quisque *vivos* pugnando locum ceperat eum amissa anima corpore tegebat. Pauci autem, quos medios *cohors praeterea* disiecerat, paulo divorsius *alis* alibi stantes, sed omnes tamen advorsis volneribus conciderant.

V. CICERO, SELECT LETTERS.

8. Translate :

(*a*) Quantum dolorem açceperim et quanto fructu sim privatus et forensi et domestico Lucii fratris nostri morte, in primis pro nostra consuetudine tu existimare potes; nam mihi omnia, quae iucunda ex humanitate alterius et moribus homini accidere possunt, ex illo accidebant; qua re non dubito quin tibi quoque id molestum sit, cum et meo dolore moveare et ipse omni virtute officioque ornatissimum tuique et sua sponte et meo sermone amantem, adfinem amicumque amiseris.

(*b*) L. LUCCEIUS Q. F. S. D. M. TULLIO M. F.

S. V. B. E. V., sicut soles, paululo tamen etiam deterius quam soles. Te requisivi saepius, ut viderem : Romae quia postea non fuisti quam decesseras, miratus sum : quod idem nunc miror.

(*c*) O hospitem mihi tam gravem *ἀμεταμέλητον* ! fuit enim periucunde. Sed cum secundis Saturnalibus ad Philippum vesperi venisset, villa ita completa militibus est, ut vix triclinium, ubi cenaturus ipse Caesar esset, vacaret ; quippe hominum CIↃ CIↃ.

9. Write a brief note upon the following terms : *nomenclator, privilegium, Latinae feriae ; Epistolary Imperfect.*

10. What was the cause of Cicero's Exile ? Give a brief account of his exile and return.

FRANCAIS.

BOURSES DE TROISIÈME ANNÉE.

LE 20 SEPTEMBRE, DE 9 HEURES A MIDI.

1. Que signifient les expressions suivantes empruntées aux *Femmes Savantes ?*

Si fait. Hors de page. Cette poésie s ent son vieux temps. Faire amende honorable. Ce qui m'a vingt fois fait tomber de mon haut.

Nous l'avons échappé belle.

Si j'étais que de vous. Il entend raillerie. Faire cas de quelque chose.

La future. Je vais de ce pas.

Il a le timbre un peu fêlé.

Sens dessus dessous. Le mot est bien collet monté.

2. (*a*) Quel ridicule Molière attaque-t-il dans *Les Femmes Savantes ?*

(*b*) De quelle faiblesse de caractère *Chrysale* fait-il preuve ?

(*c*) Quel était le travers particulier de *Bélise* ?

3. (*a*) Quels sont les motifs qui poussent Néron à se rendre coupable de la mort de *Britannicus* ?

(*b*) Comment ce meurtre est-il commis ?

(*c*) Qu'est-ce qu'Aggripine prédit à Néron ?

4. Quels sont les principaux éléments qui entrent dans la formation de la langue française ?

5. Quels sont les trois sujets favoris de la muse épique au moyen-âge, et quels poèmes en sont résultés ?

6. Par qui la poésie lyrique est-elle représentée au XVIe siècle en France ?

7. Quelles sont les causes de progrès de la littérature française au XVIIe siècle ?

8. Nommez les philosophes et les moralistes du XVIIe siècle.

9. Comparez le XVIIe et le XVIII siècles au triple point de vue de la *religion*, de la *royauté* et de la *littérature* classique.

10. Avec quels verbes omet-on *pas* ?

11. Quelles sont les règles de l'accord des participes passés placés devant un infinitif ?

12. Expliquez l'emploi du subjonctif dans les phrases suivantes :

Il n'est pas allé là, que je sache. Je veux que vous écriviez. Pensez-vous qu'ils eussent mieux réussi que vous ? Je ne croirai jamais qu'il fasse cela. Il est bon que vous le lui disiez. C'est l'homme le plus obligeant que j'aie jamais vu.

Examen oral.

Dictée.

THIRD YEAR SCHOLARSHIPS.

MYERS: *Mediæval and Modern History.* Part I.

MONDAY, SEPTEMBER 19.—2 TO 5 P.M.

1. Explain the origin, spread and character of monasticism.

2. Outline Mohammed's career.

3. Mention the incidents and effects of the Fourth Crusade.

4. Trace the rise of either Venice, Genoa or Florence.

5. What do you understand by Scholasticism? Connect the movement with mediæval universities, and name some of the principal schoolmen.

6. Describe (*a*) that part of the Hundred Years War which falls in the 14th century,

or

(*b*) in the 15th century.

7. Give a list of the Hohenstaufen emperors, 1152-1250, and furnish details of their reigns wherever possible.

8. Make brief but explicit notes on: Niebelungen Lied; Austrasia; Caedmon's "Paraphrase"; Wergild; Heraclius; Ommiads; Varangians; Council of Clermont; Lombard League; Savonarola.

THIRD YEAR SCHOLARSHIPS.

MILTON, *Paradise*, Bks. I AND II.

1. Bring together the various personal descriptions of Satan which are to be found in the first two books.

2. Name the Fallen Angels who spoke to the council in Pandemonium, and state the main arguments advanced by each.

3. Give prominent allusions in the first two books to Scripture narrative and to ancient heroes of Classic story, stating as precisely as you can where each is found.

4. Quote a few lines from any characteristic passage of marshalled allusions as, for instance, "Him the Ammonite Worshiped in Rabba"—and write explanatory notes thereon.

THIRD YEAR CLASSICAL AND MODERN LANGUAGE SCHOLARSHIPS.

ENGLISH LITERATURE.

SHAKSPERE :—*The Tempest.*

1. "The play of *The Tempest* observes the dramatic unity of time." Explain this fully.

2. Discuss :—The grouping of characters in the play, the conception of Caliban and its possible origin, the character of Miranda.

3. On what grounds, apart from chronological evidence, might *The Tempest* be held to be a production of Shakspere's maturer years ?

4. Give examples, with discussion, of the following, selected from the play of *The Tempest* :—

a. Words or phrases peculiar to Shakspere, or first employed by him.

b. Irregular verses and metres.

c. Shakspere's aptness in the use of technical expressions.

d. Verses, phrases and epithets that have become proverbial.

THIRD YEAR SCHOLARSHIPS.

CHARLES LAMB, *Essays of Elia*. (One hour and a half.)

1. Give a brief account of Charles Lamb's life.

2. Illustrate from Elia the following points :

(*a*) Love of London.

(*b*) Love of old books.

(*c*) Love of children.

3. "Good criticism depends on love of truth, contempt of conventionality and the power of sympathy with the object of criticism."
How does Elia stand in regard to those particulars ?

4. Mention, without proof, peculiarities which characterize Charles Lamb's writing.

5. Give, within the limit of two pages, an outline of one of the following essays :

(*a*) The Old and the New Schoolmaster.

(*b*) Imperfect Sympathies.

THIRD YEAR CLASSICAL AND MODERN LANGUAGE SCHOLARSHIPS.

ENGLISH COMPOSITION.

TUESDAY, 20TH SEPT.:—AFTERNOON, 2 TO 5.

Write an Essay of not less than four pages on any *one* of the following subjects:—

(*a*) Shakspere's own ideas of life, as presumably expressed in the speeches of Prospero.

(*b*) Milton's conception of the nature and attributes of Satan.

(*c*) The characteristic qualities of Charles Lamb's literary style.

THIRD YEAR SCHOLARSHIPS.

ANCIENT HISTORY.

WEDNESDAY, SEPTEMBER 21:—MORNING, 9 TO 12.

Not more than four questions to be attempted from each part of the paper—eight in all.

A.

1. Give a sketch of the State of Society in the Heroic Age.

2. Describe the Greek colonial system, and indicate the extent of the Greek colonies.

3. The causes of the Ionic Revolt, and its significance in Greek history.

4. The causes of the Peloponnesian War.

5. A short history of the Theban Supremacy.

6. A sketch of the History of Sicily.

B.

1. Give a short statement of the arguments for and against the credibility of Early Roman History.

2. Describe the original constitution of Rome.

3. Write a short sketch of the history of Agrarian Legislation at Rome.

4. A brief account of Roman military history from the Battle of Zama to the Destruction of Carthage.

5. The career and character of Marius.

6. The causes of the Civil Wars between Pompeius and Caesar.

GERMAN.

THIRD YEAR SCHOLARSHIP EXAMINATION.

WEDNESDAY, SEPT. 21ST:—AFTERNOON, 2 TO 5.

1. Translate into English:—

(*a*) Mein Wirt ist ein alter prächtiger Kerl. Er heißt Hofschulze, obgleich er gewiß noch einen andern Namen führt, denn jener bezieht sich ja nur auf den Besitz seines Eigenthums. Ich höre aber, daß dies überall hier so gehalten wird. Nur der Hof hat meistenteils einen Namen, der Name des Besitzers geht in dem der Scholle unter. Daher das Erdgeborene, Erdzähe und Dauerbare des hiesigen Geschlechtes. Mein Hofschulze mag ein Mann von etlichen sechszig Jahren sein, doch trägt er den starken, großen, knochichten Körper noch ganz ungebeugt. In dem rotgelben Gesichte ist der Sonnenbrand der fünfzig Ernten, die er gemacht hat, abgelagert, die große Nase steht wie ein Turm in diesem Gesichte, und über den blitzenden, blauen Augen hängen ihm weiße, struppige Brauen wie ein Strohdach. Er mahnt mich, wie ein Erzvater, der dem Gotte seiner Väter von unbehauenen Steinen ein Mal aufrichtet und Trankopfer darauf gießt und Öl, und seine Füllen erzieht, sein Korn schneidet und dabei über die Seinigen unumschränkt herrscht und richtet. Nie ist mir eine compactere Mischung von Ehrwürdigem und Verschmitztem, von Vernunft und Eigensinn vorgekommen. Er ist ein rechter, uralter, freier Bauer im ganzen Sinne des Worts; ich glaube, daß man diese Art Menschen nur noch hier finden kann.

(*b*) *Egmont.* Da bringt er wieder die alten Märchen auf, was wir an einem Abend in leichtem Übermut der Geselligkeit und des Weins getrieben und gesprochen, und was man daraus für Folgen und Beweise durch's ganze Königreich gezogen und geschleppt habe.— Nun gut! wir haben Schellenkappen, Narrenkutten auf unserer Diener Ärmel sticken lassen, und haben diese tolle Zierde nachher in ein Bündel Pfeile verwandelt; ein noch gefährliches Symbol für alle, die deuten wollen, wo nichts zu

deuten ist. Wir haben die und jene Thorheit in einem lustigen Augenblick empfangen und geboren; sind schuld, dasz eine ganze edle Schaar mit Bettelsäcken und mit einem selbst gewählten Unnamen dem Könige seine Pflicht mit spottender Demut ins Gedächtnis rief.

2. Translation at sight.

Translate into English :—

(*a*) Wir erblicken außer uns eine Verbindung, in welcher Keiner für sich selbst arbeiten kann, ohne für alle Andere zu arbeiten, oder für den Anderen arbeiten, ohne zugleich für sich selbst zu arbeiten, indem der glückliche Fortgang eines Mitgliedes glücklicher Fortgang für alle ist; ein Anblick, der schon durch die Harmonie, die wir in dem Allermannigfaltigsten erblicken, innig wohlthut, und unsern Geist mächtigst erhebt. Das Interesse steigt, wenn man einen Blick auf sich selbst thut und sich als Mitglied dieser großen innigen Verbindung betrachtet. Das Gefühl unsrer Würde und unsrer Kraft steigt, wenn wir uns sagen, was Jeder unter uns sich sagen kann: „Mein Dasein ist nicht vergebens und zwecklos; ich bin ein notwendiges Glied der großen Kette, die von der Entwickelung des ersten Menschen zum vollen Bewußtsein seines Daseins bis in die Ewigkeit hinausgeht.

(*b*) Es stand in alten Zeiten ein Schloß so hoch und hehr
Weit glänzt es über die Lande bis an das blaue Meer,
Und rings von duft'gen Gärten ein blütenreicher Kranz,
Drin sprangen frische Brunnen in Regenbogenglanz.

Dort saß ein stolzer König, an Land und Siegen reich;
Er saß auf seinem Throne so finster und so bleich.
Denn was er sinnt, ist Schrecken, und was er blickt, ist Wut,
Und was er spricht, ist Geißel, und was er schreibt, ist Blut.

Einst zog nach diesem Schlosse ein edles Sängerpaar,
Der Ein' in goldnen Locken, der Andre grau von Haar;
Der Alte mit der Harfe, der saß auf schmuckem Roß,
Es schritt ihm frisch zur Seite der blühende Genoß.

3. Translation at sight.

Translate into German:—

(*a*) A.—Good morning! What are you doing here at this early hour?

B.—You don't think I am here merely for pleasure, do you? I have to take this five o'clock train for Montreal.

A.—That's good! we can go together, for I am bound for the same place.

B.—Allow me to introduce my friends. Mr. Davies—Mr Arthur, Mr. Rogers—Mr. Arthur.

A.—I'm very glad to make your acquaintance, gentlemen.

B.—Well, do you enjoy getting up at four in the morning? I don't, but I had to give in to my friends, who were obliged to take this train.

(*b*) The poor old soldier whom we saw in the park yesterday was sent to me this morning by Dr. Brown, who is very anxious that some occupation be found for him. But I really don't know what can be done for him, as the old man is very lame and weak. I had a very interesting conversation with him, however. He was wounded in the leg at the battle of ———, was taken prisoner and remained in prison several months. The prisoners were much neglected and their wounds were not well attended to, so he became very ill and has been lame ever since. He says they were not given enough to eat, nor were they allowed any exercise in the fresh air. It is no wonder, therefore, that the evil effects of his serious wound could not be prevented.

MATHEMATICAL SCHOLARSHIP.

ANALYTICAL GEOMETRY—(*Second Paper*).

FRIDAY, 16TH SEPTEMBER:—MORNING, 9 TO 12.

1. Interpret $a\gamma = k\beta\delta$.

(*a*) A conic passes through the origin and through the four points

$$(1, 2),\ (3, 5),\ (-1, 4),\ (-3, -1),$$

find its equation by first finding the equations of the sides of the quadrilateral of which the last four points are the vertices and afterwards determining a suitable value for k.

2. Prove that

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - 1 = \left(\frac{x\,x'}{a^2} + \frac{y\,y'}{b^2} - 1\right)(lx + my + n)$$

is the most general equation of a conic touching $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ at the point $x'\ y'$ given on it.

3. From the equation $a\gamma = k\beta\delta$ deduce the theorem that the anharmonic ratio of a pencil, whose sides pass through four fixed points of a conic, and whose vertex is any variable point of it, is constant.

4. If three conics have each double contact with a fourth, six of their chords of intersection will pass three by three through the same points.

5. Find the condition that two conics given by the general equation should be similar and similarly placed.

6. Prove that the direction of the diameters of a parabola is the same as that of the line through the origin which meets the curve at an infinite distance.

7. Find the equation of the circle circumscribing the triangle formed by the lines $\alpha = 0$, $\beta = 0$, $\gamma = 0$.

8. Express in trilinear co-ordinates the equation of the parallel to a given line $l\alpha + m\beta + n\gamma = 0$

9. Find the condition that two lines $l\alpha + m\beta + n\gamma = 0$ and $l'\alpha + m'\beta + n'\gamma = 0$ may be mutually perpendicular.

10. By means of trilinear co-ordinates deduce the harmonic properties of a complete quadrilateral.

11. Find the area of the triangle formed by the three lines

$$Ax + By + C = 0\ ;\ A'x + B'y + C' = 0;$$
$$A''x + B''y + C'' = 0.$$

12. Find the co-ordinates of the intersections of the right line $Ax + By + C = 0$ with the right line joining the points $x'\ y'$ and $x''\ y''$.

MATHEMATICAL SCHOLARSHIPS.

ANALYTICAL GEOMETRY—(*First Paper*).

THURSDAY, SEPTEMBER 15TH :—MORNING, 9 TO 12.

1. (*a*) Give the geometrical definition of a conic whose eccentricity is e, and find its equation referred to rectangular axes through the focus as origin.

(*b*) Find the equation of the tangent at any point of the curve thus found.

(*c*) Hence show for any conic that if tangents be drawn to it from any point, the line joining this point to the focus bisects the angle between the radii vectors from the focus to the points of contact.

2. Find the locus of the centre of a circle which makes given intercepts on two given lines.

3. Define similar and similarly placed figures, and show that if two central conic sections be similar and similarly placed, all diameters of the one are proportional to the parallel diameters of the other.

4. The locus of the extremity of the perpendicular from the focus of a parabola in the tangent is a right line.

5. The sum of two focal chords of an hyperbola drawn parallel to conjugate diameters is constant. (Draw accurately the figure corresponding to this.)

6. If through any point on the axis minor of an ellipse, and through the two foci, a circle be drawn, it will cut the ellipse in a point such that the line joining it to the given point shall be a normal to the ellipse.

7. The equation of the tangent to an ellipse may be written

$$x \cos \alpha + y \sin \alpha - \sqrt{a^2 \cos^2 \alpha + b^2 \sin^2 \alpha} = 0.$$

8. Prove that the asymptotes of an equilateral hyperbola are at right angles to each other.

(*a*) Find by transformation of co-ordinates the equation of this hyperbola referred to the asymptotes as axes.

9. Transform the conic

$$3x^2 + 4xy + y^2 - 5x - 6y - 3 = 0$$

to parallel axes through the centre as origin.

10. Given the base and vertical angle of a triangle, find the locus of the intersection of the perpendiculars of the triangle.

11. A homogeneous equation of the nth degree in x and y denotes n right lines passing through the origin.

12. Find the equation of the line which bisects the angle between two given lines.

MATHEMATICAL SCHOLARSHIP.

CALCULUS.

TUESDAY, SEPTEMBER 20TH :—MORNING, 9 TO 12.

1. Find the equation of the normal at any point in the curve $y^m = ax^n$.

2. Prove the expression in polar co-ordinates for the perpendicular on the tangent to any curve

$$\frac{1}{p^2} = u^2 + \left(\frac{du}{d\theta}\right)^2$$

(*a*) Hence show that $\frac{d^2u}{d\theta^2} + u = \frac{1}{p^3 u^2}\frac{dp}{dr}$

3. Using the eccentric angle, prove that the radius of curvature in the ellipse

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

has the value $\frac{(a^2 \sin^2\phi + b^2 \cos^2\phi)^{\frac{3}{2}}}{ab}$

4. Find the length of the part of the normal to the catenary

$$y = \frac{a}{2}\left(e^{\frac{x}{a}} + e^{\frac{-x}{a}}\right)$$

intercepted by the axis of x.

5. Find the condition that the curves

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1 \; ; \; \frac{x^2}{a'^2} + \frac{y^2}{b'^2} = 1$$

should intersect at right angles.

6. Find the maximum and minimum values of

$$u = a \sin x + b \cos x.$$

7. If $\frac{f(x) + \phi(x)}{f(x) - \phi(x)}$ be a maximum, show immediately that $\frac{f(x)}{\phi(x)}$ is a minimum.

8. An arc of a circle revolves round a diameter passing through one extremity, show that the volume of the hemispherical cap thus generated is

$$\pi h^2 \left(a - \frac{h}{3}\right)$$

9. In the logarithmic spiral $r = a^{\theta}$ prove that the length of any arc is proportional to the difference between the vectors of its extremities.

10. Find the formula of reduction for $\int \cos^n \theta \, d\theta$.

11. Find the formula of reduction of

$$\int \frac{}{(a + cx^2)^n}$$

when m and n are both positive.

12. Integrate $\int e^x \left(\frac{e\,1 - x}{1 + x^2}\right)^2 dx$

13. Integrate $\int \cos^3 \theta \sin 2\theta \, d\theta$; $\int \frac{x^5 \, dx}{(1 + x^3)^{\frac{1}{2}}}$

$\int \tan^4 \theta \, d\theta$; $\int \tan^n \theta \, d\theta$.

14. Integrate $\int \sin^3 \theta \, d\theta$; $\int \frac{x^5 \, dx}{(a^2 - x^2)^2}$; $\int \frac{dx}{1 - x^3}$.

NATURAL SCIENCE SCHOLARSHIP.

BOTANY.

FRIDAY, SEPTEMBER 16TH:—9 TO 12 A.M.

1. Give an account of the work of Cesalpino, and show what position it holds in scientific botany.

2. State what you can concerning the work of Linnæus and its relation to the development of botanical science.

3. Who were the earliest plant anatomists, and what was the general character of their work?

4. Sketch the life history of a typical Myxomycete, and define its position among plants.

5. Give a concise account of the general characteristics of the Gymnosperms, and sketch their relations to the Angiosperms and Pteridophytes from the standpoint of development.

6. Trace the gradual obliteration of the sexual phase in plants, showing where it attains its greatest prominence.

7. Outline the characteristics of the Solanaceæ and describe their principal economic properties. Examples.

8. Give a concise account of the source of carbon in plants and the process by which it is fixed.

9. State what you can concerning the life history and distribution of the Bacteria.

10. Define the geographical range of the Sapindaceæ, Rosaceæ, Coniferæ and Leguminosæ. Indicate their most prominent representatives in Canada, and point out their chief economic values.

11. Describe the habitat of Caltha palustris, Aster cordifolius, Equisetum arvense and Lycopodium complanatum.

12. Give a concise account of the development and structure of a seed, and explain the occurrence of polyembryonic conditions.

Examination of plants on Tuesday, Sept. 20th, 9 to 12 a.m.

FACULTY OF ARTS.

MATHEMATICAL AND NATURAL SCIENCE SCHOLARSHIPS.

LOGIC.

MONDAY, 19TH SEPT.:—MORNING, 9 TO 12.

1. Define *Logic;* and justify the definition.

2. Explain and illustrate: Position and Negation in regard to names, the tree of Porphyry, names ambiguous from accidental identity, names ambiguous from perversion of meaning.

3. Give the rules of Logical Definition, and illustrate their application with original examples.

4. Give the logical opposites, the converse, and (if possible) the contrapositive of each of the following propositions:—

(*a*) Sweet are the uses of adversity.

(*b*) Faint heart never won fair lady.

(*c*) Every injustice meets its reward.

(*d*) Things are not what they seem.

(*e*) Procrastination is the thief of time.

5. What is the Figure of a Syllogism? Give the moods of the First Figure. Explain fully why no affirmative conclusion is possible in the Second Figure.

6. Explain, with original examples:—Modus Ponens and the corresponding fallacy, Dilemma, Sorites.

7. Test the following cases of reasoning, and express some conclusion as to their value:—

(*a*) Words are but wind; and learning is nothing but words; *ergo*, learning is nothing but wind.

Swift.

(*b*) But every man cannot distinguish between pedantry and poetry every man, therefore, is not fit to innovate.

Dryden.

(*c*) Bodine goes further yet, and will have the *animae separatae*, genii, spirits, angels, devils, and so likewise souls of men departed, if corporeal (which he most eagerly contends), to be of some shape, and absolutely round, like sun and moon, because that is the most perfect form, "quae nihil habet asperitatis, nihil angulis incisam, nihil anfractibus involutum, nihil eminens, sed inter corpora est perfectissimum", therefore all spirits (he concludes) are, in their propershapes, round.

Burton.

8. Make notes on and illustrate: Observation and Experiment, the Inductive Method of Agreement, Division and Definition as necessary to classification, the two principal requisites of a philosophical language.

ANNE MOLSON MATHEMATICAL PRIZE.

CALCULUS.

FRIDAY, SEPT. 16TH:—MORNING, 9 TO 12.

1. For all values of x between 0 and l, prove that

$$\tfrac{1}{2}\int_o^l \phi(v)\,do + \sum_{n=1}^{n=\infty}\int_o^l \phi(v)\cos\frac{n\pi(v+x)}{l}\,do = 0.$$

2. U and V are finite and continuous functions of x, y, z (the rectangular co-ordinates of a point) for all points within a given closed surface S, state and prove Green's theorem concerning them.

3. If P and Q are real functions of x and y, that are finite and continuous for all points within a certain plane region, prove

$$\iint\left(\frac{dQ}{dx} - \frac{dP}{dy}\right)dx\,dy = \int\left(P\,dx + Q\,dy\right)$$

4. Define a *solid harmonic function*, and find the condition that

$$ax^2 + by^2 + cz^2 + dxy + exz + fyz$$

should be a solid harmonic.

5. Transform

$$\frac{d^2V}{dx^2} + \frac{d^2V}{dy^2} + \frac{d^2V}{dz^2}$$ to polar co-ordinates.

6. Eliminate C and C' from the equation

$$y = \frac{\cos mx}{n^2 - m^2} + C\cos nx + C''\sin nx.$$

7. Find the condition that

$$P\,dx + Q\,dy$$

shall be a total differential.

8. Define *inverse curves*, and prove that if two curves intersect at any angle, their inverse curves intersect at the same angle.

9. A sphere is cut by a cylinder, one of whose edges passes through the centre of the sphere, and the radius of whose base is half that of the sphere, find the area of the portion of the surface of the cylinder intercepted by the sphere.

10. Show that the volume included within the surface represented by the equation

$$F\left(\frac{x}{a}, \frac{y}{b}, \frac{z}{c}\right) = 0.$$

is $abc \times$ volume of the surface $F(x; y, z) = 0$.

11. Find the length of any arc of the catenary

$$y = \frac{a}{2}\left(e^{\frac{x}{a}} + e^{\frac{-x}{a}}\right)$$

12. Find the value of $\int_0^{\pi} \sin^4 x \cos^4 x \, dx$.

FACULTY OF APPLIED SCIENCE.

ENTRANCE EXAMINATIONS.
1898.

FACULTY OF APPLIED SCIENCE.

ENTRANCE EXAMINATIONS,

1898.

FACULTY OF APPLIED SCIENCE.

MATRICULATION EXAMINATION.

MATHEMATICS (*First Paper.*)

FRIDAY, SEPTEMBER 16TH:—MORNING, 9 TO 12.

N.B.—It is necessary to pass in each subject. All the work must be shown; answers alone will not be accepted. Write your name at the top of the paper; write in the margin only the number of the question you are about to answer. One side only of the paper will be examined, the other may be used for scribbling.

ARITHMETIC.

1. Find the amount of \$256.28 for $2\frac{1}{2}$ years at 4 per cent. compound interest.

2. Find, each to 3 decimal places, the square roots of 290 and .000235.

3. Three men can do a piece of work in 14 hours, 5 boys can do it in 20 hours; in what time could 2 men and 3 boys together do the work?

4. Each side of a cubical vessel is 3 feet. Express this in centimetres and the volume in litres.

ALGEBRA.

5. Find the factors of (1) $x^2 - x - 2$, (2) $2 - 3x - 2x^2$, (3) $(7x + 3)^2 - (5x - 4)^2$, and reduce the fraction $\frac{x^2 - 2x + 1}{3x^3 + 7x - 10}$ to its lowest terms.

6. Simplify $\left\{\frac{2}{x} - \frac{1}{a+x} + \frac{1}{a-x}\right\} \div \left\{\frac{a+x}{a-x} - \frac{a-x}{a+x}\right\}$.

7. Solve the equations

(1) $(x + 1)(x + 2)(x + 3) = (x + 4)(x + 5)(x - 3) + 84$,

(2) $\frac{x+2}{x-1} - \frac{x-1}{x+2} + \frac{21}{10}$,

(3) $\left\{\begin{array}{l} x^2 + y^2 = 89 \\ xy = 40 \end{array}\right\}$.

8. Rationalize the denominator of $\frac{4 + 3\sqrt{2}}{5 - 3\sqrt{2}}$, and solve the equation $\sqrt{x + 4ab} = 2a + \sqrt{x}$.

MATRICULATION EXAMINATION.

MATHEMATICS (*Second Paper*).

FRIDAY, SEPTEMBER 16TH:—AFTERNOON, 2 TO 5.

GEOMETRY.

1. If the squares on two sides of a triangle are together equal to the square on the third side, the two sides contain a right angle.

2. Divide a straight line into two parts, so that the rectangle contained by the whole and one of the parts may be equal to the square on the other part.

(*a*) Show that the rectangle contained by the two parts is equal to the difference of the squares on those parts.

3. Describe an isosceles triangle which shall have each of the base angles double of the vertical angle.

(*a*) Show that the small circle in the figure employed is equal to that described about the required triangle.

4. In a right-angled triangle, if a perpendicular be drawn from the right angle to the base, the triangles on each side of it are similar to the whole triangle and to each other.

5. If four straight lines be proportionals, the rectangle contained by the extremes is equal to that contained by the means.

TRIGONOMETRY.

6. When is the sine of a positive angle + and when —? When is the tangent + and when —? What limits of value has the sine? What the tangent?

7. Express the unit of the circular measurement of angles in degrees, minutes and seconds.

8. Show that

(1) $\sec^2 \theta = 1 + \tan^2 \theta$,

(2) $\cos^4 \theta + \sin^4 \theta = 1 - 2 \cos^2 \theta \sin^2 \theta$,

(3) $\tan^2 \theta + \cot^2 \theta = \sec^2 \theta \operatorname{cosec}^2 \theta - 2$,

(4) $\sin (A-B) = \sin A \cos B - \cos A \sin B$.

9. Find $\tan (A + B)$ in terms of $\tan A$ and $\tan B$.

10. Given $\sin A = \frac{2}{3}$, find $\sin 2A$ and $\cos 2A$.
In this example $\sin 2A$ should be $\pm$, but $\cos 2A$ only $+$. Explain.

SECOND YEAR EXHIBITION AND PRIZE EXAMINATION.

MATHEMATICS.

SATURDAY, OCTOBER 8TH:—MORNING, 9 TO 12.

Examiner,..... ....R. S. LEA, MA.E.

1. Of the triangle ABC, the base BC is given, and the vertical angle A. Find the locus of the vertex.

If the side BA is produced to D, so that BD is equal to the sum of BA and AC, find the locus of D.

2. Find the lateral surface and volume of a right circular cone. Bisect the lateral surface by a plane parallel to the base.

3. The areas of sections of a pyramid by parallel planes are proportional to the squares of their distances from the vertex.

4. Explain two methods of drawing a tangent to a parabola from a point on the curve, and state the propositions upon which these methods are based.

5. Solve the equations:—

(1) $\left.\begin{aligned} x^2 + xy &= 15 \\ y^2 + xy &= 10 \end{aligned}\right\}$

(2) $\dfrac{x - 1}{\sqrt{x} - 1} = 3 + \dfrac{\sqrt{x} + 1}{2}$

6. Find the sum of the series $\sqrt{2}$, $\sqrt{6}$, $3\sqrt{2}$ .... to 12 terms.

7. If the number of permutations of n things taken 4 at a time, is to the number of combinations of $2n$ things taken 3 at a time as 22 is to 3, show that $n = 14$.

8. By means of the Binomial Theorem find,

(1) The 4th root of 620,

(2) The total number of combinations that can be made from n different things, taking them 1, and 2, and 3, ... and n at a time.

9. Show that:—

(1) $(\operatorname{cosec}\theta - \cot\theta)^2 = \dfrac{1 - \cos\theta}{1 + \cos\theta}$

(2) $\operatorname{cosec} 2\theta - \cot 2\theta = \cot\theta$

(3) $2 \sin A \cos 2A = \sin 3A - \sin A$.

10. In any plane triangle ABC

(1) $\cos A = \dfrac{b^2 + c^2 - a^2}{2bc}$

(2) $\sin A \sin B \sin C = \frac{1}{4}(\sin 2A + \sin 2B + \sin 2C)$

11. In any spherical triangle ABC

$$\cos A = \frac{\cos a - \cos b \cos c}{\sin b \sin c}$$

12. Deduce the formula required, and find the dihedral angles between, the faces of any two of the regular polyhedra.

13. Two masses of 4 and 5 lbs. respectively are connected by a string which passes over a smooth pulley at the top of a smooth plane inclined to the horizontal at an angle of 45°. If the 4 lb. mass hang vertically, in what direction will it move, and with what acceleration?

FOURTH YEAR EXHIBITION AND PRIZE.

MATHEMATICS.

SATURDAY, OCTOBER 8TH :—MORNING, 9 TO 12.

Examiner.....G. H. CHANDLER, M.A.

1. The tangent at the point (x_1, y_1) on the curve $u = c$ is

$$\left(\frac{du}{dx}\right)_1 (x - x_1) + \left(\frac{du}{dy}\right)_1 (y - y_1) = 0.$$

2. If $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1$ show that $\dfrac{d^2y}{dx^2} = -\dfrac{b^4}{ay^3}$.

3. The radius of curvature at any point of an ellipse is

$$\frac{(a^4y^2 + b^4x^2)^{\frac{3}{2}}}{a^4 b^4}.$$

4. What are conjugate diameters of an ellipse? Find the length b_1 of the semi-diameter conjugate to that passing through the point (x, y) on the curve. Show that the radius of curvature at this point $= b_1^3/ab$.

5. The height of the greatest rectangle which can be inscribed in a given right segment of a parabola is $\frac{2}{3}$ of the height of the latter.

6. Showthat

(1) $\int_0^a \frac{x\,dx}{\sqrt{a^2+x^2}} = a(\sqrt{2}-1)$,

(2) $\int_0^{\frac{1}{4}\pi} \frac{\sin\theta\,d\theta}{\cos^2\theta} = \sqrt{2}-1$,

(3) $\int_1^4 \frac{dx}{x^2+4} = \frac{1}{2}\tan^{-1}\frac{3}{4}$,

(4) $\int_0^a (a^2-x^2)^{\frac{n}{2}}\,dx = a^{n+1}\int_0^{\frac{1}{2}\pi} \cos^{n+1}\theta\,d\theta$.

7. Integrate $x^2(\log x)^2\,dx$ by parts.

8. Show that the whole length of the cycloid is four times the diameter of the generating circle.

9. Show how to find the equation to the tangent of a parabola the tangent making a given angle with a given straight line.

10. Find the ratio of the applied force to the resistance in a single pulley when friction is taken into account.

11. A train weighing 100 tons runs at 42 miles an hour on a level track, the resistance being 8 pounds per ton. Show that the speed up a 1 per cent. grade would be only 12 miles an hour for the same engine power.

12. A cylindrical disc rolls down a rough inclined plane. Determine the motion.

FOURTH YEAR EXHIBITION AND PRIZE.

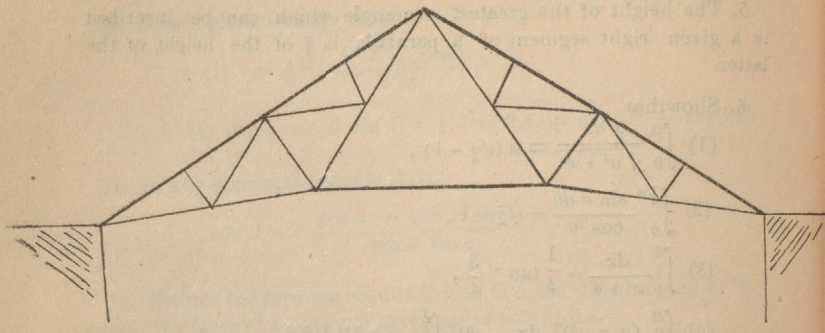
THEORY OF STRUCTURES.

OCTOBER, 1898.

1. Describe the method of reciprocal figures for finding the stresses in the members of a frame.

Draw the reciprocal figure for this roof truss; assuming equal vertical loads at all the top joints.

Point out any peculiarity which presents itself in the work of drawing the figure.



Examine the effect of a normal wind pressure on one side, rollers being placed under foot of other rafter.

2. A beam of 50 ft. span is subjected to a travelling load concentrated on two wheels 12 ft. apart; 5 tons on one wheel and 10 tons on the other.

Set out to scale a diagram giving the maximum positive and negative shearing forces at all points of the length of the beam.

3. Find a relation between the three elastic moduluses, namely, Young's modulus E, the modulus of rigidity C, and the modulus of cubical compressibility K.

4. Show that the work done in deflecting within the elastic limits, a uniform rectangular bar supported at the ends and loaded in the middle, is equal to the volume of the bar multiplied by $\frac{1}{3} \frac{f^2}{2E}$ where f is the maximum stress on the bar.

5. Show that if a uniform rectangular bar is bent to a curve of uniform radius R by a uniform bending moment M, the stress will be approximately direct and the co-efficient of elasticity will be

$$E = \frac{R\ M}{I}$$

Point out wherein the result is only approximate.

6. Establish a formula for the moment of resistance to torsion of a solid shaft of circular section and deduce a formula for a hollow shaft.

The angle of torsion of a shaft is limited to 1° for each 10 feet of length; find the diameter for a twisting moment of 50 inch tons, the modulus of transverse elasticity being 10,000,000 lbs. per square inch.

7. Describe a practicable method of finding Young's modulus and the

Modulus of Rigidity for a given rod of metal, indicating in some detail how you would carry out the experiments and how you would reduce the observations.

8. Explain what is meant by the fluctuation of energy in a machine. Prove the approximate relation which exists between the fluctuation of energy and the fluctuation of speed in a steam engine provided with a heavy fly-wheel.

In an engine making 140 revolutions per minute the mean kinetic energy of the moving parts is twice and the fluctuation of energy is one-eighth the energy developed in one revolution. Find approximately the maximum and minimum angular velocities of the fly-wheel.

9. Find the intensities and directions of the principal stresses on the top of a horizontal shaft two inches in diameter, when subject to equal bending (in a vertical plane) and twisting moments (M).

10. What is the object of counterbracing, or using "semi-members" in bridge and other frames.

An N girder with eight panels has to bear a dead load of 4 tons on each bottom joint and a rolling load also of 4 tons per bottom joint. Which of the panels should be counterbraced, and why?

FACULTY OF ARTS

SESSIONAL EXAMINATIONS,

1899

GREEK.

FIRST YEAR SESSIONAL EXAMINATION.

A.—HOMER, ODYSSEY IX.; DEMOSTHENES, OLYNTHIACS, AND EURIPIDES, ALCESTIS 1-746.

WEDNESDAY, APRIL 5TH:—MORNING, 9 TO 12.

(Note.—A, B, C, to be shewn up in different books.)

1. Translate, with notes on words and phrases underlined —

(*a*) στησάμενοι δ' ἐμάχοντο μάχην παρὰ νηυσὶ θοῇσιν,
βάλλον δ' ἀλλήλους χαλκήρεσιν ἐγχείῃσιν.
ὄφρα μέν ἠὼς ἦν καὶ ἀέξετο ἱερὸν ἦμαρ,
τόφρα δ' ἀλεξόμενοι μένομεν πλεόνάς περ ἐόντας·
ἦμος δ' Ἠέλιος μὲ ἐνίσσετο βουλυτόνδε,
καὶ τότε δὴ Κίκονες κλῖναν δαμάσαντες Ἀχαιούς

(*b*) οὐ μὲν γάρ τι κακή γε, φέροι δέ κεν ὥρια πάντα·
ἐν μὲν γὰρ λειμῶνες ἁλὸς πολιοῖο παρ' ὄχθας
ὑδρηλοὶ μαλακοί· μάλα κ' ἄφθιτοι ἄμπελοι εἶεν.
ἐν δ' ἄροσις λείη· μάλα κεν βαθὺ λήϊον αἰεὶ
εἰς ὥρας ἀμῷεν, ἐπεὶ μάλα πῖαρ ὕπ' οὖδας.

(*c*) "Ὦ ξεῖνοι, τίνες ἐστέ; πόθεν πλεῖθ' ὑγρὰ κέλευθα;
ἦ τι κιτὰ πρῆξιν ἢ μαψιδίως ἀλάλησθε
οἷά τε λῃϊστῆρες ὑπεὶρ ἅλα, τοίτ' ἀλόωνται
ψυχὰς παρθέμενοι, κακὸν ἀλλοδαποῖσι φέροντες;"
Ὣς ἔφατ', ἡμῖν δ' αὖτε κατεκλάσθη φίλον ἦτορ
δεισάντων φθόγγον τε βαρὺν αὐτόν τε πέλωρον.

(*d*) τοῦ μὲν ὅσον τ' ὄργυιαν ἐγὼν ἀπέκοψα παραστὰς,
καὶ παρέθηχ' ἑτάροισιν, ἀποξῦσαι δὲ κέλευσα·
οἱ δ' ὁμαλὸν ποίησαν· ἐγω δ' ἐθόωσα παραστὰς
ἄκρον, ἄφαρ δὲ λαβὼν ἐπυράκτεον ἐν πυρὶ κηλέῳ.

(*e*) αὐτὰρ ὅγ' ἐξαῦτις πολὺ μείζονα λᾶαν ἀείρας
ἦκ' ἐπιδινήσας, ἐπέρεισε δὲ ἶν' ἀπέλεθρον,
κὰδ' δ' ἔβαλεν μετόπισθε νεὸς κυανοπρώροιο
τυτθὸν, ἐδεύησεν δ' οἰήϊον ἄκρον ἱκέσθαι.
ἐκλύσθη δὲ θάλασσα κατερχομένης ὑπὸ πέτρης·
τὴν δὲ πρόσω φέρε κῦμα, θέμωσε δὲ χέρσον ἱκέσθαι.

B.—DEMOSTHENES OLYNTHIACS.

1. Translate :—

Τὸ μὲν οὖν ἐπίορκον καὶ ἄπιστον καλεῖν ἄνευ τοῦ τα πεπραγμένα δεικνύναι λοιδορίαν εἶναί τις ἂν φήσειε κενὴν δικαίως· τὸ δὲ πάνθ', ὅσα πώποτ' ἔπραξε, διεξιόντα ἐφ' ἅπασι τούτοις ἐλέγχειν καὶ βραχέος λόγου συμβαίνει δεῖσθαι, καὶ δυοῖν ἕνεκα ἡγοῦμαι συμφέρειν εἰρῆσθαι, τοῦ τ' ἐκεῖνον, ὅπερ καὶ ἀληθὲς ὑπάρχει, φαῦλον φαίνεσθαι, καὶ τοῦ τοὺς ὑπερεκπεπληγμένους ὡς ἄμαχόν τινα τὸν Φίλιππον ἰδεῖν ὅτι πάντα διεξελήλυθεν οἷς πρότερον παρακρουόμενος μέγας ηὐξήθη, καὶ πρὸς αὐτὴν ἥκει τὴν τελευτὴν τὰ πράγματ αὐτοῦ.

2. Translate :—

(*a*) Τὸ γὰρ τοὺς πολεμήσοντας Φιλίππῳ γεγενῆσθαι καὶ χώραν ὅμορον καὶ δύναμίν τινα κεκτημένους, καὶ τὸ μέγιστον ἁπάντων, τὴν ὑπὲρ τοῦ πολέμου γνώμην τοιαύτην ἔχοντας ὥστε τὰς πρὸς ἐκεῖνον διαλλαγὰς πρῶτον μὲν ἀπίστους εἶτα ἑαυτῶν πατρίδος νομίζειν ἀνάστασιν, δαιμονίᾳ τινὶ καὶ θείᾳ παντάπασιν ἔοικεν εὐεργεσίᾳ.

(*b*) οὔθ' ὅσ' ἂν πορίσωσιν οὕτως ὅπως ἂν δύνωνται, ηαὐτ' ἔχοντες διαθέσθαι κεκλημένων τῶν ἐμπορίων τῶν ἐν τῇ χώρᾳ διὰ τὸν πόλεμον.

(*c*) Καὶ γὰρ τοὺς ἐπὶ τῶν προγόνων ἡμῶν λέγοντας ἀκούω, ὥσπερ ἴσως καὶ ὑμεῖς, οὓς ἐπαινοῦσι μὲν οἱ παριόντες ἅπαντες μιμοῦνται δ' οὐ πάνυ, τούτῳ τῷ ἔθει καὶ τῷ τρόπῳ τῆς πολιτείας χρῆσθαι, τὸν Ἀριστείδην ἐκεῖνον, τὸν Νικίαν, τὸν ὁμώνυμον ἐμαυτῷ, τὸν Περικλέα.

(*d*) Ἂν μὲν γὰρ, ὅσα ἄν τις λάβῃ, καὶ σώσῃ, μεγάλην ἔχει τῇ τύχῃ τὴν χάριν.

(*e*) Τῶν ἀτοπωτάτων μέντ' ἂν εἴη, εἰ ἃ νῦν ἄνοιαν ὀφλισκάνων ὅμως ἐκλαλεῖ, ταῦτα δυνηθεὶς μὴ πράξει.

(*f*) Ἐκ δὲ τοῦ τὰ μὲν Ἑλληνικὰ πιστῶς, τὰ δὲ πρὸς τοὺς θεοὺς εὐσεβῶς, τὰ δ' ἐν αὐτοῖς ἴσως διοικεῖν μεγάλην εἰκότως ἐκτήσαντο εὐδαιμονίαν.

C.—EURIPIDES, ALCESTIS, 1-746.

1. Translate :—

Πολλά σε μουσοπόλοι
μελψουσι καθ' ἑπτάτονόν τ' ὀρείαν
χελυν ἔν τ' ἀλύροις κλέοντες ὕμνοις,
Σπάρτᾳ κύκλον ἀνίκα Καρνείου περινίσσεται ὥρα
μηνὸς ἀειρομένας
παννύχου σελάνας,
λιπαραῖσι τ' ἐν ὀλβίαις Ἀθάναις.

2. Translate with short notes on grammatical structure :—

(1) ἱερὸς γὰρ οὗτος τῶν κατὰ χθονὸς θεῶν
ὅτου τόδ' ἔγχος κρατὸς ἁγνίσῃ τρίχα.

(2) ἴστω νυν εὐκλεής γε κατθανουμένη
γυνή τ' ἀρίστη τῶν ὑφ' ἡλίῳ μακρῷ.

(3) κοὔτις ἦν οὕτω κακὸς
ὃν οὐ προσεῖπε καὶ προσερρήθη πάλιν.

(4) ὦ παῖδες αὐτοὶ δὴ τάδ' εἰσηκούσατε
πατρὸς λέγοντος μὴ γαμεῖν ἄλλην τινά
γυναῖκα.

(5) οὐ τόνδ' ἀγῶνα πρῶτον ἂν δράμομ' ἐγώ.

(6) οὐκ οἶσθα μοίρας ἧς τυχεῖν αὐτὴν χρεών ;

(7) λυπουμένοις ὀχληρός, εἰ μόλοι, ξένος.

(8) καὶ νεανίας λόγους
ῥίπτων ἐς ἡμᾶς οὐ βαλὼν οὕτως ἄπει.

(9) εἰ δ' ἀπειπεῖν χρὴν με κηρύκων ὕπο
τὴν σὴν πατρῴαν ἑστίαν, ἀπεῖπον ἄν.

3. Parse with parts of verbs :—

μεταστῆναι, συνέζευξαι, πέσοι, ἐπόψει, ἐπιγήμῃς.

FIRST YEAR SESSIONAL EXAMINATION.

GREEK HISTORY.

WEDNESDAY, APRIL 5TH :—2 TO 3 P.M.

1. Explain Aristagoras' position with regard to the Ionian revolt.

2. Write notes on Διάκριοι. Ostracism. Κληροῦχος. Φήμη (at Mycale). Harmodius and Aristogeiton.

3. What were the reasons for Platæans' alliance with Athens? When were they formally freed from the Bœotian League?

4. How was Ægina instrumental in making Athens a naval power?

5. Give a short description of (1) Themistocles' character, and (2) the fall of Miltiades.

6. Describe the battle of Salamis.

FIRST YEAR SESSIONAL EXAMINATION.

GREEK COMPOSITION AND TRANSLATION AT SIGHT.

WEDNESDAY, APRIL 5TH :—3 TO 5.30 P.M.

A.

Translate into Greek :—

(1) He said that his daughter had much money.

(2) They do not know how they can manage their houses.

(3) He asked whether Cyrus had conquered the enemy.

(4) I was in need of messengers in order that I might announce what had taken place.

(5) I should like to know whether he would have seen Socrates if he had then been present in the city.

(6) Whenever he saw the prison being opened, he used to go in to see those who were there.

(7) When anyone asked him how he should manage the affairs of the city, he said that he did not know.

(8) As long as the Athenians are masters of the sea, I do not think that they will suffer anything.

The following are for Advance Section : Optional for others.

(9) It is a good thing to take measures to guard the camp as well as possible.

(10) I fear that he will tell everything to those who crossed the river with Xenophon.

(11) He was not born to desire peace.

(12) There was none to whom I did not announce that e conquerors had already taken the city.

B.

Translate into English :—

Οἱ μὲν οὖν ἄλλοι στρατῆγοι ἔμενον ἐν τῷ στρατοπέδῳ, ὁ δὲ Ξενοφῶν ᾤετο δεῖν εὐθὺς παραπλεύσαι ἵνα φθάνοι τοὺς τῶν πολεμίων ἐκεῖ φυλάσσοντας, πρὶν ἐπανελθεῖν πάλιν· ὁ γὰρ Τισσαφέρνης, ὃς τούτων ἦρχε, ἐν τῇ νήσῳ χρόνον τινα ὀλίγοι διέτριβε, βουλόμενος τήν τε πόλιν εἰ δύναιτο ἑλεῖν καὶ ληψόμενος ἅμα ὅσα ἐκεῖ κατέκειτο χρήματα. Λαθὼν οὖν ὁ Ξενοφῶν ἐς Μίλητον ἀφίκετο καὶ ἄλλους στρατιώτας ἐκεῖθεν μισθώσας, οὕτω μετὰ μείζονος ἤδη στρατεύματος τοῦ πολεμεῖν ἥπτετο.

INTERMEDIATE EXAMINATION.

GREEK BOOK.

WEDNESDAY, APRIL 5TH :—MORNING, 9 TO 12.

A.—THUCYDIDES, SIEGE OF PLATAEA AND RETREAT FROM SYRACUSE.

1. Translate, with notes on words and phrases underlined :—

(*a*) ἀπεκρίναντο αὐτῷ ὅτι ἀδύνατα σφίσιν εἴη ποιεῖν ἃ προκαλεῖται ἄνευ Ἀθηναίων· παῖδες γὰρ σφῶν καὶ γυναῖκες παρ' ἐκείνοις εἶεν· δεδιέναι δὲ καὶ περὶ τῇ πάσῃ πόλει μὴ ἐκείνων ἀποχωρησάντων Ἀθηναῖοι ἐλθόντες σφίσιν οὐκ ἐπιτρέπωσιν.

(*b*) Οἱ δὲ Πελοποννήσιοι, αἰσθόμενοι, ἐν ταρσοῖς καλάμου πηλὸν ἐνείλλοντες ἐσέβαλλον ἐς τὸ διῃρημένον, ὅπως μὴ διαχεόμενον ὥσπερ ἡ γῆ φοροῖτο. οἱ δὲ ταύτῃ ἀποκληόμενοι τοῦτο μὲν ἐπέσχον, ὑπόνομον δ' ἐκ τῆς πόλεως ὀρύξαντες ὑπὸ τὸ χῶμα ὑφεῖλκον αὖθις παρὰ σφᾶς τὸν

χοῦν· καὶ ἐλάνθανον ἐπὶ πολὺ τοὺς ἔξω, ὥστ' ἐπιβάλλοντας ἧσσον ἀνύτειν, ὑπαγομένου αὐτοῖς κάτωθεν τοῦ χώματος καὶ ἰζάνοντος ἀεὶ ἐπὶ τὸ κενούμενον.

(*c*) ἀλλ' ὅσοι τε Ἀθηναίων πάρεστε, πολλῶν ἤδη πολέμων ἔμπειροι ὄντες, καὶ ὅσοι τῶν ξυμμάχων, ξυστρατευόμενοι ἀεί, μνήσθητε τῶν ἐν τοῖς πολέμοις παραλόγων. καὶ τὸ τῆς τύχης κἂν μεθ' ἡμῶν ἐλπίσαντες στῆναι, καὶ ὡς ἀναμαχούμενοι ἀξίως τοῦδε τοῦ πλήθους, ὅσον αὐτοὶ ὑμῶν αὐτῶν ἐφορᾶτε, παρασκευάζεσθε.

(*d*) δι' ὀλίγου γὰρ οὔσης τῆς θέας, καὶ οὐ πάντων ἅμα ἐς τὸ αὐτὸ σκοπούντων, εἰ μέν τινες ἴδοιέν πῃ τοὺς σφετέρους ἐπικρατοῦντας, ἀνεθάρσησάν τε ἂν καὶ πρὸς ἀνάκλησιν θεῶν μὴ στερῆσαι σφᾶς τῆς σωτηρίας ἐτρέποντο· οἱ δ' ἐπὶ τὸ ἡσσώμενον βλέψαντες ὀλοφυρμῷ τε ἅμα μετὰ βοῆς ἐχρῶντο, καὶ ἀπὸ τῶν δρωμένων τῆς ὄψεως καὶ τὴν γνώμην μᾶλλον τῶν ἐν τῷ ἔργῳ ἐδουλοῦντο.

(*e*) τοιαύταις δὲ προσβολαῖς καὶ οὐ ξυνταδὸν μάχαις οἱ Συρακόσιοι εἰκότως ἐχρῶντο· τὸ γὰρ ἀποκινδυνεύειν πρὸς ἀνθρώπους ἀπονενοημένους οὐ πρὸς ἐκείνων μᾶλλον ἦν ἔτι ἢ πρὸς τῶν Ἀθηναίων, καὶ ἅμα φειδώ τε τις ἐγίγνετο, ἐπ' εὐπραγίᾳ ἤδη σαφεῖ, μὴ προαναλωθῆναί τῳ καὶ, ἐνόμιζον καὶ ὡς ταύτῃ τῇ ἰδέᾳ καταδαμασάμενοι λήψεσθαι αὐτούς.

2. Explain κατάστρωμα, ἐπωτίς, ἀνάκρουσις, διέκπλους.

3. Draw a plan of Syracuse, and describe the position of affairs at the time at which this narrative begins.

4. (*For Advance Section : optional for others.*)
Translate with notes :—

(*a*) ἄπειροι μὲν ὄντες οἱ πλείους ἐν σκότῳ καὶ πηλῷ τῶν διόδων ἧ χρὴ σωθῆναι.

(*b*) τοὺς ἀχρειοτάτους ξὺν γυναιξὶ καὶ παισὶν ἐξεκόμισαν.

(*c*) ἠκόντιζον, εἴ τις παραβοηθῶν παρὰ τὸ τεῖχος κωλυτὴς γίγνοιτο τῆς διαβάσεως.

(*d*) τὴν δὲ πόλιν ἐνιαυτὸν μέν τινα Θηβαῖοι Μεγαρέων ἀνδράσι κατὰ στάσιν ἐκπεπτωκόσι. . . ἔδοσαν ἔνοικεῖν.

(*e*) διὰ τὸ βλάπτειν ἂν τὸ τῆς ἐπιστήμης τῶν νεῶν.

B.—SOPHOCLES, AJAX.

1. Translate, without notes:—

(*a*) ἀλλ' ἀψόφητος ὀξέων κωκυμάτων
ὑπεστέναζε ταῦρος ὡς βρυχώμενος.
νῦν δ' ἐν τοιᾷδε κείμενος κακῇ τύχᾳ
ἄσιτος ἀνὴρ, ἄποτος, ἐν μέσοις βοτοῖς
σιδηροκμῆσιν ἥσυχος θακεῖ πεσών.
καὶ δῆλός ἐστιν ὥς τι δρασείων κακόν.

(*b*) ἔφριξ' ἔρωτι περιχαρὴς δ' ἀνεπτόμαν.
ἰὼ ἰὼ Πὰν Πὰν,
ὦ Πὰν Πὰν ἁλίπλαγκτε, Κυλλανίας χιονοκτύπου
πετραίας ἀπὸ δειράδος φάνηθ', ὦ
θεῶν χοροποι' ἄναξ ὅπως μοι
Νύσια Κνώσι ὀρχήματ' αὐτοδαῆ ξυνὼν ἰάψῃς.

2. Translate, with notes on words and phrases underlined:—

(*a*) ἀλλ' οὐδὲ νῦν σε μὴ παρόντ' ἴδῃ πέλας.

(*b*) ὥρα τιν' ἤδη κάρα καλύμμασι κρυψάμενον ποδοῖν κλοπὰν ἀρέσθαι,
ἢ θοὸν ἐ'ρεσίας ξυγὸν ἑζόμενον
ποντοπόρῳ ναΐ μεθεῖναι,

(*c*) τί γὰρ παρ' ἦμαρ ἡμέρα τέρπειν ἔχει
προσθεῖσα κἀναθεῖσα τοῦ γε κατθανεῖν.

(*d*) ἔπηξα δ' αὐτὸν εὖ περιστείλας ἐγὼ
εὐνούστατον τῷδ' ἀνδρὶ διὰ τάχους θανεῖν.

(*e*) οἱ γὰρ κακοὶ γνώμαισι τἀγαθὸν χεροῖν
ἔχοντες οὐκ ἴσασι, πρ ν τις ἐκβάλῃ.

(*f*) τίς ἂν δῆτά μοι, τίς ἂν φιλοπόνων
ἁλιαδᾶν ἔχων ἀύπνους ἄγρας,
ἢ τίς Ὀλυμπιάδων θεᾶν, ἢ ῥυτῶν
Βοσπορίων ποταμῶν, τὸν ὠμόθυμον
εἴ ποθι πλαζόμενον λεύσσων
ἀπύοι.

(*g*) ξωστῆρι πρισθεὶς ἱππικῶν ἐξ ἀντύγων
ἐκνάπτετ' αἰὲν, ἔστ' ἀπέψυξεν βίον.

(*h*) MEN. ἐγὼ γὰρ ἂν ψέξαιμι δαιμόνων νόμους ;
ΤΕΥ. εἰ τοὺς θανόντας οὐκ ἐᾷς θάπτειν παρών.
MEN. τοὺς γ' αὐτὸς αὑτοῦ πολεμίους· οὐ γὰρ
καλόν.

(*i*) μηδ' ἡ βιά σε μηδαμῶς νικήσατω
τοσόνδε μισεῖν ὥστε τὴν δίκην πατεῖν.

3. Explain ἔφεδρος, Ταυροπόλα Ἄρτεμις, Χθονίων Ἐρεχθειδῶν.

4. (*For Advance Section: optional for others*).

Translate with notes:—

(*a*) ὡς εὐμαθές σου, κἂν ἄποπτος ᾖς ὅμως,
φωνημ' ἀκούω.

(*b*) μηδ' ὄγκον ἄρῃ μηδέν'. . (v. l. ἄρῃς).

(*c*) ταύρους, κύνας βοτῆρας, εὔερόν τ' ἄγραν (MSS. εὔκερων).

(*d*) οὐ γὰρ γένοιτ' ἂν ταῦθ' ὅπως οὐχ ὧδ' ἔχειν. (v. l. ἔχει).

(*e*) ἐγὼ δ' ὁ τλάμων παλαιὸς ἀφ' οὗ χρόνος
Ἰδαῖα μίμνω λειμώνι' ἄποινα, μηνῶν
ἀνήριθμος αἰὲν εὐνώμᾳ χρόνῳ τρυχόμενος.
MSS Ἰδαία μίμνων λειμωνίᾳ χρόνῳ ποίαι μήλων... εὐνόμαι.

(*f*) κοὐδεὶς ἐπίσταταί με συμμαθεῖν τόπος.
vv. ll σφε συνναίειν (Jebb), ἐφίσταται (Campbell).

(*g*) ὃν οὐδαμοῦ φής, οὗ σὺ μή, βῆναι ποδί ; MSS. οὐδὲ συμβῆναι.

(*h*) Scan the first three lines of 1 (*b*).

INTERMEDIATE EXAMINATION.

GREEK HISTORY AND LITERATURE.

WEDNESDAY, APRIL 5TH:—AFTERNOON, 2 TO 3.

Not more than six questions to be attempted, three from each division of the paper.

A.

1. Show how the attention of Athens gradually became concentrated on the sea during the years 480-431. What were the chief battles and alliances that led to this? Give dates. Indicate also the effects on the life of Athenian citizens.

2. What were the chief constitutional changes in Athens during this period? Which were due to Themistocles, Aristides and Pericles respectively? Indicate some of the effects of these changes.

3. With what events are the following names associated? Amphipolis, Naupactus, Eurymedon, Naxos. Indicate the effects of these events on the general course of the history of Athens.

4. Explain the following terms :—Trierarch, Prytanis, Boulé, Choregus. What do you know of the history of the Tribute (Phoros)?

B.

1. Show how the periods into which the history of Greek Literature naturally falls correspond with definite stages in the national development.

2. State very briefly what you know of Thespis, the Gnomic Poets, Delos, Archilochus, Simonides, Panhellenism, the Dramatic Unities, Aeschylus.

3. Give a very brief explanation of each of the following: Distich, Strophe, Antistrophe, Epode, Dithyramb, Epinikion, Parabasis, Deus ex machina, the Irony of Greek Tragedy, Rhapsodists, Cyclic Poets.

4. Briefly characterize the different periods in the history and development of Greek Comedy.

INTERMEDIATE EXAMINATION.

GREEK COMPOSITION AND TRANSLATION AT SIGHT.

WEDNESDAY, APRIL 5:—3 TO 5.30 P.M.

A.

Translate into Greek:—

When the Hispanoi were in the harbour of Santiagon, it seemed good to the Americanoi not to allow them to escape. For they thought that, if they could conquer them there, they would thus finish the war. And a certain trierarch named Hobides determined to sink his own ship in the entrance, which was narrow, and thus to prevent the enemy from escaping. Accordingly at night he sailed in, and by cutting through the timbers of the ship, sank it; and he hoped to escape the notice of those on guard there and thus to get away, but was captured. The enemy however admiring him as a brave man, showed much friendship towards him.

B.

Translate into English :—

(1) Catching a Tartar.

αἱ δὲ Ἀττικαὶ νῆες φθάνουσιν τοὺς Λακεδαιμονίους πλὴν μιᾶς προκαταφυγοῦσαι ἐς τὴν Ναύπακτον, καὶ ἴσχουσαι ἀντίπρῳροι κατὰ τὸ Ἀπολλώνιον παρεσκευάζοντο ἀμυνούμενοι, ἢν ἐς τὴν γῆν ἐπὶ σφᾶς πλέωσιν. οἱ δὲ παραγενόμενοι ὕστερον ἐπαιάνιζόν τε ἅμα πλέοντες ὡς νενικηκότες καὶ τὴν μίαν ναῦν τῶν Ἀθηναίων τὴν ὑπόλοιπον ἐδίωκε Λευκαδία ναῦς μία πολὺ πρὸ τῶν ἄλλων. ἔτυχε δὲ ὀλκὰς ὁρμοῦσα μετέωρος, περὶ ἣν ἡ Ἀττικὴ ναῦς φθάσασα τῇ Λευκαδίᾳ διωκούσῃ ἐμβάλλει μέσῃ καὶ καταδύει

(2) Why wish to be king?

τί τὴν τυραννίδ', ἀδικίαν εὐδαίμονα,
τιμᾶς ὑπέρφευ, καὶ μέγ' ἤγησαι τόδε,
περιβλέπεσθαι τίμιον ; κενὸν μὲν οὖν.
ἢ πολλὰ μοχθεῖν πόλλ' ἔχων ἐν δώμασι
βούλει ; τί δ' ἔστι τὸ πλέον ; ὄνομ' ἔχει μόνον·
ἐπεὶ τά γ' ἀρκοῦνθ' ἱκανὰ τοῖς γε σώφροσιν.
οὗτοι τὰ χρήματ' ἴδια κέκτηνται βροτοὶ,
τὰ τῶν θεῶν δ' ἔχοντες ἐπιμελούμεθα·
ὅταν δὲ χρῄζωσ', αὖτ' ἀφαιροῦνται πάλιν.

THIRD YEAR SESSIONAL EXAMINATION.

GREEK BOOKS.

(Answers to A and B to be shown up in separate books.)

TUESDAY, APRIL 11TH :—MORNING, 9 TO 12.

A.—ISOCRATES, PANEGYRICUS.

1. Translate :—

(*a*) Παραλαβόντες ἅπαντα τὸν ὄχλον τὸν ἐκ τῆς πόλεως

εἰς τὴν ἐχομένην νῆσον ἐξέπλευσαν. What is the name of the construction here? What is the island?

(*b*) Μόνοι δὴ τῶν μεγάλην δύναμιν λαβόντων περιείδομεν ἡμᾶς αὐτοὺς ἀπορωτέρως ζῶντας τῶν δουλεύειν αἰτίαν ἐχόντων. Write a note on the last two words.

(*c*) Δία δὲ τὴν πυκνότητα τῶν μεταβολῶν ἀθυμοτέρως διάγουσιν οἱ τὰς πόλεις οἰκοῦντες τῶν ταῖς φυγαῖς ἐζημιωμένων· οἱ μὲν γὰρ τὸ μέλλον δεδίασιν, οἱ δ' ἀεὶ κατιέναι προσδοκῶσιν.

(*d*) Ποθέσαι δὲ τὴν ἡγεμονίαν τὴν ἡμετέραν. Write a note on the form ποθέσαι.

(*e*) Τὴν μέν γε Μαντινέων πόλιν εἰρήνης ἤδη γεγενημένης ἀνάστατον ἐποίησαν. What other delinquencies of the Lacedaemonians does he proceed to enumerate?

(*f*) Τὴν συμμαχίαν τὴν περὶ Κόρινθον συστᾶσαν. What was this alliance and its date? What does Isocrates say about it here?

(*g*) Ὁ βασιλεὺς τοὺς ἄρχοντας τοὺς τῶν ἐπικούρων ὑποσπόνδους συλλαβεῖν ἐτόλμησεν. What is the episode alluded to here? What were the names of the leaders referred to?

(*h*) Οἱ δ' ἐν ταῖς μεγίσταις δόξαις ὄντες αὐτῶν ὁμαλῶς μὲν οὐδὲ κοινῶς οὐδὲ πολιτικῶς οὐδεπώποτ' ἐβίωσαν. Parse ἐβίωσαν.

(*i*) Διὸ καὶ τοὺς Ἴωνας ἄξιον ἐπαινεῖν, ὅτι τῶν ἐμπρησθέντων ἱερῶν ἐπηράσαντ' εἴ τινες κινήσειαν. What various explanations are proposed of the Genitive here?

(*k*) Τὰ μὲν γὰρ ὑπὲρ μικρῶν ἔργων καὶ μιᾶς τύχης

ἐστὶν, αὗται δ' ὕπερ ἅπαντος τοῦ πολέμου καὶ καθ' ὅλης τῆς Ἑλλάδος ἑστήκασιν. What does he allude to here?

(*l*) Τῶν δὲ συλλήβδην τάς τε χρείας καὶ τὰς ἐργασίας καὶ τάς ὠφελείας τὰς ἀπ' αὐτῶν γιγνομένας ἐδίδαξεν. What services are referred to here?

2. What mention is made in this speech of Conon, the children of Hercules, Alexander, Evagoras? Also of Lycia, Chios, Phaselis? Be brief.

B.—EURIPIDES, IPHIGENIA AT AULIS.

1. Translate, with brief notes :—

(*a*) ΑΓΑ. πέμπω σοι πρὸς ταῖς πρόσθεν
δέλτοις, ὦ Λήδας ἔρνος,
μὴ στέλλειν τὰν σὰν ἶνιν πρὸς
τὰν κολπώδη πτέρυγ' Εὐβοίας
Αὐλιν ἀκλύσταν.
εἰς ἄλλας ὥρας γὰρ δὴ
παιδὸς δαίσομεν ὑμεναίους.

(*b*) ΜΕ. ἄπελθε· λίαν δεσπόταισι πιστὸς εἶ.
ΠΡ. καλόν γέ μοι τοὔνειδος ἐξωνείδισας.
ΜΕ. κλαίοις ἄν, εἰ πράσσοις ἃ μὴ πράσσειν σε δεῖ
ΠΡ. οὐ χρὴν σε λῦσαι δέλτον, ἣν ἐγὼ ἔφερον.
ΜΕ. οὐδέ γε φέρειν σε πᾶσιν Ἕλλησιν κακά.
ΠΡ. ἄλλοις ἀμιλλῶ ταῦτ'· ἄφες δὲ τήνδ' ἐμοί.

(*c*) ΚΛ. ἡμεῖς δὲ θοίνην ποῦ γυναιξὶ θήσομεν;
ΑΓΑ. ἐνθάδε παρ' εὐπρύμνοισιν Ἀργείων πλάταις.
ΚΛ. καλῶς ἀναγκαίως τε· συνενέγκοι δ' ὁμῶς.
ΑΓΑ. οἶσθ' οὖν ὃ δρᾶσον, ὦ γύναι· πιθοῦ δέ μοι.
ΚΛ. τί χρῆμα; πείθεσθαι γὰρ εἴθισμαι σέθεν.
ΑΓΑ. ἡμεῖς μὲν ἐνθάδ', οὗπέρ ἐσθ' ὁ νυμφίος,

ΚΛ. μητρὸς τί χωρὶς δράσεθ', ἀμὲ δρᾶν χρεών;
ΑΓΑ. ἐκδώσομεν σὴν παῖδα Δαναϊδῶν μέτα.
ΚΛ. ἡμᾶς δὲ ποῦ χρὴ τηνικαῦτα τυγχάνειν;
ΑΓΑ. χώρει πρὸς Ἄργος παρθένους τε τημέλει.
ΚΛ. λιποῦσα παῖδα; τίς δ' ἀνασχήσει φλόγα;
ΑΓΑ. ἐγὼ παρέξω φῶς ὃ νυμφίοις πρέπει.

(*d*) ΑΧ. ὑψηλόφρων μοι θυμὸς αἴρεται πρόσω·
ἐπίσταται δὲ τοῖς κακοῖσί τ' ἀσχαλᾶν
μετρίως τε χαίρειν τοῖσιν ἐξωγκωμένοις.

(*e*) μή μοι ναῶν χαλκεμβολάδων
πρύμνας ἄδ' Αὐλὶς δέξασθαι
τούσδ' εἰς ὅρμους εἰς Τροίαν
ὤφελεν ἐλάταν πομπαίαν,
μηδ' ἀνταίαν Εὐρίπῳ
πνεῦσαι πομπὰν Ζεύς, μειλίσσων
αὔραν ἄλλοις ἄλλαν θνατῶν
λαίφεσι χαίρειν,
τοῖσι δὲ λύπαν, τοῖσι δ' ἀνάγκαν,
τοῖς δ' ἐξορμᾶν, τοῖς δὲ στέλλειν,
τοῖσι δὲ μέλλειν.

(*f*) ὁ παῖς δ' ὁ Πηλέως ἐν κύκλῳ βωμὸν θεᾶς
λαβὼν κανοῦν ἔθρεξε χέρνιβάς θ' ὁμοῦ,
ἔλεξε δ'· ὦ παῖ Ζηνός, ὦ θηροκτόνε,
τὸ λαμπρὸν εἰλίσκουσ' ἐν εὐφρόνῃ φάος,
δέξαι τὸ θῦμα τόδ' ὅ γέ σοι δωρούμεθα.

2. Translate and comment on:—

(*a*) ἀντήρεις καμπαῖσι δρόμων.

(*b*) Αἴδης νιν ὡς ἔοικε νυμφεύσει τάχα.

(*c*) Φρυγίων αὐλῶν Ὀλύμπου καλάμοις μιμήματα πνέων.

(*e*) ὁ λόγος εἰς μελλοντα σώσει χρόνον· ἔχει δ' ὄγκον τινά

(*f*) οὐ σύριγγι τραφεῖσαν, οὐδ'
ἐν ροιβδήσεσι βουκόλων.
παρὰ δὲ ματέρι νυμφόκομον
Ἰναχίδαις γάμον.

(*g*) βρέφος τε τοὐμὸν σᾷ προσώρισας πάλῳ.

3. Explain σύριγγας ἁρματείους, ναῶν κόρυμβα, προτελίζουσι, ἐνδεξιούσθω βωμόν.

4. Comment on metrical peculiarities in:—

(*a*) κἄμ' ὡς ὑπέστην θῦμα, κᾆτα ψεύδομαι.

(*b*) ὑμεῖς δὲ, νεάνιδές, νιν ἀγκάλαις ἔπι.

(*c*) ὑποδραμοῦσα προσβαλεῖν διὰ χρόνου.

(*d*) ΑΧ. αὐτὸ τοῦτο. ΚΛ. τίς δ' ἂν ἔτλη σώματος τοῦ σοῦ θιγεῖν.

Scan four first lines of 1 (*e*).

THIRD YEAR SESSIONAL EXAMINATION.

TUESDAY, APRIL 11TH, 1899:—2 TO 3 P.M.

(*Not more than three questions from A.*)

A. History—

1. Explain the terms: (1) Decelean War. (2) Iphicrates' Peltasts. (3) σκυταλισμός. (4) Peace of Antalcidas. (5) The Sacred Band.

2. (*a*) Discuss shortly the policy which resulted in the disaster at Syracuse, and show how it was opposed to that of Pericles.

(*b*) What was the importance as an object lesson of the Retrea of the Cyreans.

3. Write short notes on (1) the Mutilation of the Hermæ. (2) The Four hundred. (3) Battle of Ægospotami. (4) The Importance of the Hellespont to Athens.

4. Describe briefly the character of (1) Lysander. (2) Theramenes. (3) Philip of Macedon.

B. Literature—

1. Discuss the arrangements for the production of a Greek play and the precautions taken to ensure a fair verdict, giving technical terms.

2. Write briefly on:—(*a*) The light thrown on the form of Greek Drama by a consideration of its Historical origin. (*b*) The changes in the general style and character of the Drama during the period from Æschylus to Euripides.

3. Indicate the literary position and importance of Thucydides, Antiphon and Isocrates in regard to the development of Greek prose style. State briefly the characteristic differences between Greek and English oratory.

THIRD YEAR SESSIONAL EXAMINATIONS.

GREEK PROSE AND TRANSLATION AT SIGHT.

TUESDAY, APRIL 11TH:—AFTERNOON, 3 TO 5.30.

A. Translate into Greek:—

It is the custom among the Athenians, whenever they feast, for one of the guests to give thanks to the Gods before they begin. And if a priest be present, they ask him to do this on their behalf. Now Theodosius, though he was priest of Zeus (and this is the highest of such offices) was nevertheless considered to be somewhat more fond of bodily pleasures than befitted a holy man. And one might well believe this to be true if one saw his behaviour at a public banquet. For before saying anything, he always looked at the tablet, on which was written what they were going to eat. And usually he began with the words, "We give great thanks," but if he saw that the host was going to set hare before them, he addressed the God in the following stately manner:—"O Zeus, giver of all blessings."

B. Translate into English:—

(1) Ἀλλὰ μὴν ὁπηνίκα καὶ πεποιηκώς, ἃ κατηγορῶ, καὶ

ὕβρει πεποιηκὼς φαίνεται, τοὺς νόμους ἤδη σκοπεῖν δεῖ, ὦ ἄνδρες δικασταί· κατὰ γὰρ τούτους δικάσειν ὀμωμόκατε. καὶ θεωρεῖθ', ὅσῳ μείζονος ὀργῆς καὶ ζημίας ἀξιοῦσι τοὺς ἑκουσίως καὶ δι' ὕβριν πλημμελοῦντας, τῶν ἄλλως πως ἐξαμαρτανόντων. πρῶτον μὲν τοίνυν οἱ περὶ τῆς βλάβης οὗτοι νόμοι πάντες, ἵν' ἐκ τούτων ἄρξωμαι, (528) ἂν μὲν ἑκὼν βλάψῃ, διπλοῦν, ἂν δ' ἄκων, ἁπλοῦν τὸ βλάβος κελεύουσιν ἐκτίνειν. εἰκότως· ὁ μὲν γὰρ παθὼν πανταχοῦ βοηθείας δίκαιος τυγχάνειν, τῷ δράσαντι δ' οὐκ ἴσην τὴν ὀργήν, ἄν θ' ἑκὼν ἄν τ' ἄκων, ἔταξεν ὁ νόμος. ἔπειθ' οἱ φονικοὶ τοὺς μὲν ἐκ προνοίας ἀποκτιννύντας θανάτῳ καὶ ἀειφυγίᾳ καὶ δημεύσει τῶν ὑπαρχόντων ζημιοῦσι, τοὺς δ' ἀκουσίως αἰδέσεως καὶ φιλανθρωπίας πολλῆς ἠξίωσαν.

(2) νικῶν δ' ἔφεδρον παῖδ' ἔχεις τὸν Πηλέως,
ὅς σ' οὐκ ἐάσει ναυσὶν ἐμβαλεῖν φλόγα,
οὐδ' ὧδ' Ἀχαιοὺς ὡς δοκεῖς ἀναρπάσαι.
αἴθων γὰρ ἀνὴρ καὶ πεπύργωται θράσει.
ἀλλὰ στρατὸν μὲν ἥσυχον παρ' ἀσπίδας
εὔδειν ἐῶμεν ἐκ κόπων ἀρειφάτων,
κατάσκοπον δὲ πολεμίων, ὃς ἂν θέλῃ,
πέμπειν δοκεῖ μοι· κἂν μὲν αἴρωνται φυγὴν,
στείχοντες ἐμπέσωμεν Ἀργείων στρατῷ,
εἰ δ' ἐς δόλον τιν' ἦδ' ἄγει φρυκτωρία,
μαθόντες ἐχθρῶν μηχανὰς κατασκόπου
βουλευσόμεσθα· τήνδ' ἔχω γνώμην, ἄναξ.

B.A. EXAMINATION.

GREEK BOOKS.

FRIDAY, APRIL 14TH:—MORNING, 9 TO 12.

(Answers A and B to be shewn up in different books.)

A—PLATO, REPUBLIC I & X.

1. Translate and explain in reference to the context:—

(*a*) ἡ οὖν δὴ τίσι τί ἀποδίδοῦσα τέχνη δικαιοσύνη ἂν καλοῖτο;

(*b*) ἔοικεν οὖν ἡ δικαιοσύνη καὶ κατὰ σὲ καὶ καθ' Ὅμηρον καὶ κατὰ Σιμωνίδην κλεπτική τις εἶναι.

(*c*) ἀλλ', οἶμαι, λέγομεν τῷ ῥήματι οὕτως, ὅτι ὁ ἰατρὸς ἐξήμαρτε καὶ ὁ λογίστης ἐξήμαρτε καὶ ὁ γραμματιστής· τὸ δ', οἶμαι, ἕκαστος τούτων καθ' ὅσον τοῦτ' ἔστιν, ὃ προσαγορεύομεν αὐτόν, οὐδέποτε ἁμαρτάνει.

(*d*) ἤντινα ἄρα ὠφέλειαν κοινῇ ὠφελοῦνται πάντες οἱ δημιουργοί, δῆλον ὅτι κοινῇ τινι τῷ αὐτῷ πορσχρώμενοι ἀπ' ἐκείνου ὠφελοῦνται.

(*e*) τὸν τοῦ τρίτου ἄρα γεννήματος ἀπὸ τῆς φύσεως μιμητὴν καλεῖς;

(*f*) ταὐτὸν καὶ τὸν μιμητικὸν ποιητὴν φήσομεν κακὴν πολιτείαν ἰδίᾳ ἑκάστου τῇ ψυχῇ ἐμποιεῖν.

(*g*) οὕτω πόρρω που, ὡς ἔοικεν, ἐσκήνηται τοῦ θανάσιμος εἶναι.

(*h*) ἀλλ' ἐμυκᾶτο, ὅπότε τις τῶν οὕτως ἀνιάτως ἐχόντων εἰς πονηρίαν ἢ μὴ ἱκανῶς δεδωκὼς δίκην ἐπιχειροίη ἀνιέναι.

(*i*) οὗ τὴν μὲν ἠλακάτην τε καὶ τὸ ἄγκιστρον εἶναι ἐξ ἀδάμαντος, τοῦ δὲ σφόνδυλον μικτὸν ἔκ τε τούτου καὶ ἄλλων γενῶν.

2. Translate, with short notes on words and phrases underlined :—

(*a*) εἰ δ' ἀληθὲς ἢ μή, πειράσομαι μαθεῖν.

(*b*) ἀλλ' οὐ μὴ οἷος τ' ἦς.

(*c*) τῷ δικαίῳ ὑπάρχει, καὶ εἰ μηδεμία ἄλλη ζημία, τά γε οἰκεῖα δι' ἀμέλειαν μοχθηροτέρως ἔχειν.

(*d*) ὡς οὐχὶ αὐτοῖσιν ὠφέλειαν ἐσομένην ἐκ τοῦ ἄρχειν.

(*e*) οὐ μέντοι καλῶς γε εἰστίαμαι δι' ἐμαυτόν, ἀλλ' οὐ διὰ σέ.

(*f*) αὐτοὶ ἂν ἐπαιδαγώγουν ὅπῃ ἦσαν, ἕως ἱκανῶς παιδείας μεταλάβοιεν.

(*g*) παλαιὰ μέν τις διαφορὰ φιλοσοφίᾳ τε καὶ ποιητικῇ· καὶ γὰρ ἡ λακέρυζα πρὸς δεσπόταν κύων ἐκείνη κραυγάζουσα καὶ μέγας ἐν ἀφρόνων κενεαγορίαισι καὶ ὁ τῶν διὰ σοφῶν ὄχλος κρατῶν καὶ οἱ λεπτῶς μεριμνῶντες ὅτι ἄρα πένονται, καὶ ἄλλα μυρία σημεῖα παλαιᾶς ἐναντιώσεως τούτων.

(*h*) ἔφη δέ, ἐπειδὴ οὖ ἐκβῆναι τὴν ψυχήν, πορεύεσθαι μετὰ πολλῶν.

3. Summarize (*a*) the views successively advanced by Thrasymachus and Socrates' refutation of them : (*b*) the proof of immortality of the soul.

4. In what context do the following names occur :— Themistocles, Charondas, Anachasies, Ardiaeus ?

5. Translate, without notes :—

Ἀλλὰ δεῖ, ὦ Γλαύκων, ἐκεῖσε βλέπειν. Ποῖ ; ἦ δ' ὅς. Εἰς τὴν φιλοσοφίαν, καὶ ἐννοεῖν ὧν ἅπτεται καὶ οἵων ἐφίεται ὁμιλιῶν, ὡς ξυγγενὴς οὖσα τῷ τε θείῳ καὶ ἀθανάτῳ καὶ τῷ ἀεὶ ὄντι, καὶ οἷα ἂν γένοιτο τῷ τοιούτῳ πᾶσα ἐπισ-

πομενη και ταυτης τῆς ὀρμῆς ἐκκομισθεῖσα ἐκ τοῦ πόντου, ἐν ᾧ νυν ἐστι, καὶ περικρουσθεῖσα πέτρας τε καὶ ὄστρεα, ἃ νῦν αὐτῇ, ἅτε γῆν ἐστιωμένῃ, γεηρὰ καὶ πετρώδη πολλὰ καὶ ἄγρια περιπέφυκεν.

B.

1. Translate :—

(a) καὶ νῦν ὅδ' ἐνθάδ' ἐστί που καταπτακών·
ὀσμὴ βροτείων αἱμάτων με προσγελᾷ.
ὅρα ὅρα μαλ' αὖ, παντᾶ λεῦσσε μὴ
λάθῃ φύγδα βὰς ματροφόνος ἀτίτας·
Ὁ δ' αὖτέ γ' ἀλκὰν ἔχων
περὶ βρέτει πλεχθεὶς θεᾶς ἀμβρότου
ὑπόδικος θέλει γενέσθαι χερῶν.
Τὸ δ' οὐ πάρεστιν· αἷμα ματρῷον χαμαὶ
δυσαγκόμιστον, παπαῖ.
Τὸ διερὸν πέδοι χύμενον οἴχεται.
Ἀλλ' ἀντιδοῦναι δεῖ σ' ἀπὸ ζῶντος ῥοφεῖν
ἐρυθρὸν ἐκ μελέων πέλανον.

(b) Κακαῖς ἐπιρροαῖσι βορβόρῳ θ' ὕδωρ
λαμπρὸν μιαίνων οὔποθ' εὑρήσεις ποτόν.
τὸ μητ' ἄναρχον μήτε δεσποτούμενον
ἀστοῖς περιστέλλουσι βουλεύω σέβειν,
καὶ μὴ τὸ δεινὸν πᾶν πόλεως ἔξω βαλεῖν.
τίς γὰρ δεδοικὼς μηδὲν ἔνδικος βροτῶν;
τοιόνδε τοι ταρβοῦντες ἐνδίκως σέβας,
ἔρυμά τε χώρας καὶ πόλεως σωτήριον
ἔχοιτ' ἄν, οἷον οὔτις ἀνθρώπων ἔχει
οὔτ' ἐν Σκύθαισιν οὔτε Πέλοπος ἐν τόποις.

(c) χαίρετε χὑμεῖς· προτέραν δ' ἐμὲ χρὴ
στείχειν θαλάμους ἀποδείξουσαν
πρὸς φῶς ἱερὸν τῶνδε προπομπῶν.

ἴτε καὶ σφαγίων τῶνδ' ὑπὸ σεμνᾶν
κατὰ γῆς σύμεναι τὸ μὲν ἀτηρὸν
χώρας κατέχειν, τὸ δὲ κερδαλέον
πέμπειν πόλεως ἐπὶ νίκῃ.

2. Describe briefly the metre of 1 (c).

3. Enumerate the classes of compounds in Greek, giving an example of each.

4. Discuss briefly the form ἀμυνάθου.

B.A. EXAMINATION.

GREEK HISTORY, ANTIQUITIES AND LITERATURE.

FRIDAY, APRIL 14TH, 1898:—2 TO 3 P.M.

1. Give briefly the constitutional changes due to Cleisthenes. Indicate the chief directions in which the constitution was subsequently modified.

2. Indicate the early divisions, tribal, local and administrative, into which the Athenian population was divided. What are the chief indications that the early population was a mixed one?

3. Describe the processes of an Athenian Civil Suit. Explain ἀνθυπωμοσία, πρόκλησις, εὔθυνα, εἰσαγγελία.

4. Describe briefly the financial arrangements of Athens in 440 B. C.

5. Distinguish between νόμος, ψήφισμα, προβούλευμα; ἄποικος, μέτοικος, κληροῦχος.

6. In what sense may it be said that Pericles, Plato and Euripides represent essentially the same movement of thought? Comment on the fact that the Athenian Historians and Philosophers agree in criticizing Democracy somewhat severely.

B.A. EXAMINATION.

GREEK PROSE AND TRANSLATION AT SIGHT.

FRIDAY, APRIL 14TH:—AFTERNOON, 3 TO 5.30.

A. Translate into Greek:—

Meanwhile the movements of Hannibal had relieved the Romans of all immediate fear. It seems that he had little hopes of the Etruscans, for he straightway passed northwards by the Flaminian Road into Picenum, collecting plunder from all the Roman settlements as he went. Here he lay quiet during the heat of summer.

By this time Fabius had taken the field. He had made up his mind not to risk a battle. His plan of campaign was to move along the heights, so as to keep Hannibal in view, cutting off his supplies, intercepting his communications, and harassing him in all ways without a general action. This was not for Hannibal's interest. He wished to fight another great battle and win another great victory (the things were synonymous with him), in order that the Samnites and Italians, lately conquered, might rise and join him.

B. Translate into English:—

(1) *Ἤρξατο δ' οὖν ἐνθένδε ποθὲν ὁ Εὐθύδημος, ὡς ἐγῷμαι· Ὦ Κλεινία, πότεροί εἰσι τῶν ἀνθρώπων οἱ μανθάνοντες οἱ σοφοὶ ἢ οἱ ἀμαθεῖς; Καὶ τὸ μειράκιον, ἅτε μεγάλου ὄντος τοῦ ἐρωτήματος, ἠρυθρίασέ τε καὶ ἀπορήσας ἔβλεψεν εἰς ἐμέ. καὶ ἐγὼ γνοὺς αὐτὸν τεθορυβημένον, Θάῤῥει, ἦν δ' ἐγώ, ὦ Κλεινία, καὶ ἀπόκριναι ἀνδρείως, ὁπότερά σοι φαίνεται· ἴσως γάρ τοι ὠφελεῖ τὴν μεγίστην ὠφελείαν. Καὶ ἐν τούτῳ ὁ Διονυσόδωρος προσκύψας μοι σμικρὸν πρὸς τὸ οὖς, πάνυ μειδιάσας τῷ προσώπῳ, Καὶ μήν, ἔφη, σοί, ὦ*

Σώκρατες, προλέγω, ὅτι ὁπότερ' ἂν ἀποκρίνηται τὸ μειράκιον, ἐξελεγχθήσεται.

(2) Καπανεὺς δ' ἐπ' Ἠλέκτραισιν εἵληχεν πύλαις,
γίγας· ὅδ' ἄλλος τοῦ πάρος λελεγμένου
μείζων, ὁ κόμπος δ' οὐ κατ' ἄνθρωπον φρονεῖ,
πύργοις δ' ἀπειλεῖ δεῖν', ἃ μὴ κραίνοι τύχη·
θεοῦ τε γὰρ θέλοντος ἐκπέρσειν πόλιν
καὶ μὴ θέλοντός φησιν, οὐδὲ τὴν Διὸς
Ἔριν πέδοι σκήψασαν ἐκποδὼν σχεθεῖν.
τὰς δ' ἀστραπάς τε καὶ κεραυνίους βολὰς
μεσημβρινοῖσι θάλπεσιν προσῄκασεν·
ἔχει δὲ σῆμα γυμνὸν ἄνδρα πυρφόρον,
φλέγει δὲ λαμπὰς διὰ χερῶν ὡπλισμένην·
χρυσοῖς δὲ φωνεῖ γράμμασιν "πρήσω πόλιν."

CLASSICAL HONOUR EXAMINATION.

GREEK PRIVATE READINGS (THIRD YEAR).

FRIDAY, APRIL 14TH :—MORNING, 9 TO 1.

A.—PLATO, PHAEDO.

1. Translate :—

(*a*) Ἐνδοῦνται δέ, ὥσπερ εἰκός, εἰς τοιαῦτα ἤθη οἷοί ἄττ' ἂν καὶ μεμελετηκυῖαι τύχωσιν ἐν τῷ βίῳ. Τὰ ποῖα δὴ ταῦτα λέγεις, ὦ Σώκρατες ; Οἷον τοὺς μὲν γαστριμαργίας τε καὶ ὕβρεις καὶ φιλοποσίας μεμελετηκότας καὶ μὴ διευλαβημένους εἰς τὰ τῶν ὄνων γένη καὶ τῶν τοιούτων θηρίων εἰκὸς ἐνδύεσθαι· ἢ οὐκ οἴει ; Πάνυ μὲν οὖν εἰκὸς λέγεις. Τοὺς δέ γε ἀδικίας τε καὶ τυραννίδας καὶ ἁρπαγὰς προτετιμηκότας εἰς τὰ τῶν λύκων τε καὶ ἱεράκων καὶ ἰκτίνων γένη· ἢ ποῖ ἂν ἄλλοσέ φαμεν τὰς τοιαύτας ἰέναι ; Ἀμέλει, ἔφη ὁ Κέβης, εἰς τὰ τοιαῦτα.

(*b*) ἥδε μὲν γὰρ ἡ γῆ καὶ οἱ λίφοι καὶ ἅπας ὁ τόπος ὁ ἐνθάδε διεφθαρμένα ἐστὶ καὶ καταβεβρωμένα, ὥσπερ τὰ ἐν τῇ θαλάττῃ ὑπὸ τῆς ἅλμης, καὶ οὔτε φύεται οὐδὲν ἄξιον λόγου ἐν τῇ θαλάττῃ, οὔτε τέλειον, ὡς ἔπος εἰπεῖν, οὐδέν ἐστι, σήραγγες δὲ καὶ ἄμμος καὶ πηλὸς ἀμήχανος καὶ βόρβοροί εἰσιν, ὅπου ἂν καὶ γῆ ᾖ, καὶ πρὸς τὰ παρ' ἡμῖν κάλλη κρίνεσθαι οὐδ' ὁπωστιοῦν ἄξια· ἐκεῖνα δὲ αὖ τῶν παρ' ἡμῖν πολὺ ἂν ἔτι πλέον φανείη διαφέρειν.

2. Translate and explain, giving references to the context where necessary :—

(*a*) καὶ ὁ Κέβης ἠρέμα ἐπιγελάσας, Ἴττω Ζεύς, ἔφη, τῇ αὐτοῦ φωνῇ εἰπών.

(*b*) ναρθηκοφόροι μεν πολλοί, βάκχοι δέ τε παῦροί.

(*c*) κἂν εἰ ξυγκρίνοιτο μὲν πάντα, διακρίνοιτο δὲ μή, ταχὺ ἂν τὸ τοῦ Ἀναξαγόρου γεγονὸς εἴη, ὁμοῦ πάντα χρήματα.

(*d*) Ἀλλὰ μὴν ἐκ τούτων γ', ἔφη, τῶν ἴσων, ἑτέρων ὄντων ἐκείνου τοῦ ἴσου, ὅμως αὐτοῦ τὴν ἐπιστήμην ἐνενόησάς τε καὶ εἴληφας ;

(*e*) ἐγὼ δὲ καὶ αὐτὸς ἡγοῦμαι ὁμόδουλος τε εἶναι τῶν κύκνων καὶ ἱερὸς τοῦ αὐτοῦ θεοῦ,

(*f*) Ἀλλὰ καὶ ἐμέ, ἔφη, τὸν Ἰόλεων παρακάλει, ἕως ἔτι φῶς ἐστιν.

(*g*) ἐναντία γὰρ γίγνεται ἡ τότε αἰτία τοῦ δύο γίγνεσθαι. τότε μὲν γὰρ ὅτι ξυνήγετο πλησίον ἀλλήλων καὶ προσετίθετο ἕτερον ἑτέρῳ, νῦν δ' ὅτι ἀπάγεται καὶ χωρίζεται ἕτερον ἀφ' ἑτέρου.

(*h*) ἅμα δὲ οὐκ ἂν φύροιο ὥσπερ οἱ ἀντιλογικοὶ περί τε τῆς ἀρχῆς διαλεγόμενος καὶ τῶν ἐξ ἐκείνης ὡρμημένων.

(*i*) τὰ πέντε τὴν τοῦ ἀρτίου οὐ δέξεται, οὐδὲ τὰ δέκα τὴν τοῦ περιττοῦ, τὸ διπλάσιον· τοῦτο μὲν οὖν καὶ αὐτὸ ἄλλῳ ἐνάντιον, ὅμως δὲ τὴν τοῦ περιττοῦ οὐ δέξεται.

(*k*) ἐγγυήσασθε οὖν με πρὸς Κρίτωνα τὴν ἐναντίαν ἐγγύην ἢ ἣν οὗτος πρὸς τοὺς δικαστὰς ἠγγυᾶτο.

B.—THUCYDIDES, VI.

1. Translate :—

(*a*) Φήσει τις δημοκρατίαν οὔτε ξυνετὸν οὔτ' ἴσον εἶναι, τοὺς δὲ ἔχοντας τὰ χρήματα καὶ ἄρχειν ἄριστα βελτίστους. ἐγὼ δέ φημι πρῶτα μὲν δῆμον ξύμπαν ὠνομάσθαι, ὀλιγαρχίαν δὲ μέρος, ἔπειτα φύλακας μὲν ἀρίστους εἶναι χρημάτων τοὺς πλουσίους, βουλεῦσαι δ' ἂν βέλτιστα τοὺς ξυνετούς, κρῖναι δ' ἂν ἀκούσαντας ἄριστα τοὺς πολλούς, καὶ ταῦτα ὁμοίως καὶ κατὰ μέρη καὶ ξύμπαντα ἐν δημοκρατίᾳ ἰσομοιρεῖν.

(*b*) πᾶσι δὲ ἀνεπίφθονον τὴν προσήκουσαν σωτηρίαν ἐκπορίζεσθαι. καὶ νῦν τῆς ἡμετέρας ἀσφαλείας ἕνεκα καὶ ἐνθάδε παρόντες ὁρῶμεν καὶ ὑμῖν ταὐτὰ ξυμφέροντα. ἀποφαίνομεν δὲ ἐξ ὧν οἵδε τε διαβάλλουσι καὶ ὑμεῖς μάλιστα ἐπὶ τὸ φοβερώτερον ὑπονοεῖτε, εἰδότες τοὺς περιδεῶς ὑποπτεύοντάς τι λόγου μὲν ἡδονῇ τὸ παραυτίκα τερπομένους, τῇ δ' ἐγχειρήσει ὕστερον τὰ ξυμφέροντα πράσσοντας.

2. Translate and annotate :—

(*a*) καὶ αὖθις ὑπὸ Γελῴων ἀνάστατος γενομένη τὸ τρίτον κακῳκίσθη ὑπὸ Γελῴων (sic MSS.).

(*b*) τὸ δὲ χωρίον οὗ νῦν ἡ πόλις ἐστὶ καὶ ὃ πρῶτον ἐτειχίσθη Λίνδιοι καλεῖται.

(*c*) ἄλλως τε καὶ εἰ ξυστῶσιν αἱ πόλεις φοβηθεῖσαι (sic MSS.).

(*d*) οὐ γὰρ ἀνέλπιστον αὐτοῖς, ἀλλ' αἰεὶ διὰ φόβου εἰσὶ μή ποτε Ἀθηναῖοι αὐτοῖς ἐπὶ τὴν πόλιν ἔλθωσιν, ὥστε τάχ' ἂν ἴσως νομίσαντες, εἰ τάδε προήσονται, κἂν σφεῖς ἐν πόνῳ εἶναι, ἐθελήσειαν ἡμῖν ἤτοι κρύφα γε ἢ φανερῶς ἢ ἐξ ἑνός γέ του τρόπου ἀμῦναι.

(*e*) καὶ τῷ μὲν Νικίᾳ προσδεχομένῳ ἦν τὰ παρὰ τῶν Ἐγεσταίων, τοῖν δὲ ἑτέροιν καὶ ἀλογώτερα.

(*f*) αἰσθανόμενος αὐτοὺς μέγα παρὰ βασιλεῖ Δαρείῳ δύνασθαι.

(*g*) οὐ μέντοι τοσοῦτόν γε λειφθῆναι ὅσον εἰκὸς εἶναι, ἄλλως τε καὶ τοῖς πρώτοις τῶν Ἑλλήνων ἐμπειρίᾳ, ἰδιώτας ὡς εἰπεῖν χειροτέχναις, ἀνταγωνισαμένους.

(*h*) ἐπεὶ δημοκρατίαν γε καὶ ἐγιγνώσκομεν οἱ φρονοῦντές τι (καὶ αὐτὸς οὐδενὸς ἂν χεῖρον, ὅσῳ κἂν λοιδορήσαιμι, ἀλλὰ περὶ ὁμολογουμένης ἀνοίας οὐδὲν ἂν καινὸν λέγοιτο) καὶ τὸ μεθιστάναι αὐτὴν οὐκ ἐδόκει ἡμῖν ἀσφαλὲς εἶναι ὑμῶν πολεμίων προσκαθημένων.

(*i*) ἐτείχιζον οὖν ἐξελθόντες ἀπὸ τῆς σφετέρας πόλεως ἀρξάμενοι, κάτωθεν τοῦ κύκλου τῶν Ἀθηναίων ἐγκάρσιον τεῖχος ἄγοντες, τάς τε ἐλάας ἐκκόπτοντες τοῦ τεμένους καὶ πύργους ξυλίνους καθιστάντες.

3. Indicate on a sketch-map the positions of the chief Greek cities in Italy and Sicily, showing, as far as possible, by whom they were colonized.

4. Explain the different views that have been held with regard to the position of the Syracusan counterworks.

C.—SOPHOCLES, ANTIGONE.

1. Translate and comment on :—

(1) οὐδὲν γὰρ οὔτ' ἀλγεινὸν οὔτ' ἄτης ἄτερ

οὔτ' αἰσχρὸν οὔτ' ἄτιμόν ἐσθ', ὁποῖον οὐ
τῶν σῶν τε κἀμῶν οὐκ ὄπωπ' ἐγὼ κακῶν.

(2) τόνδιο' ἐμὸν φρόνημα, κοὔποτ' ἔκ γ' ἐμοῦ
τιμῇ προέξουσ' οἱ κακοὶ τῶν ἐνδίκων.

MSS. τιμὴν.

(3) ὡς ἂν σκοποί νυν ἦτε τῶν εἰρημένων.

(4) κρατεῖ δὲ μηχαναῖς ἀγραύλου
θηρὸς ὀρεσσιβάτα, λασιαύχενά θ'
ἵππον ὀχμάζεται ἀμφὶ λόφον ζυγῶν,
οὔρειόν τ' ἀκμῆτα ταῦρον.

MSS. ἕξεται (ἄξεται A) ἀμφίλοφον.

(5) εἰ τὸν ἐξ ἐμῆς
μητρὸς θανόντ' ἄθαπτον ᾐσχόμην κύνες (sic MSS.)

(6) καί σ' οὔτ' ἀθανάτων φύξιμος οὐδεὶς
οὔθ' ἀμερίων σέ γ' ἀνθρώπων, ὁ δ' ἔχων μέμηνεν.

(7) ἀλλ' εὖ γέ τοι κάτισθι μὴ πολλοὺς ἔτι
τρόχους ἀμιλλητῆρας ἡλίου τελῶν,
ἐν οἷσι τῶν σῶν αὐτὸς ἐκ σπλάγχνων ἕνα
νέκυν νεκρῶν ἀμοιβὸν ἀντιδοὺς ἔσει.

(8) σὲ δ' ὑπὲρ διλόφου πέτρας στέροψ ὄπωπε
λιγυύς, ἔνθα Κωρύκιαι
στείχουσι Νύμφαι Βακχίδες.
Κασταλίας τε νᾶμα.
καί σε Νυσαίων ὀρέων
κισσήρεις ὄχθαι χλωρά τ' ἀκτὰ
πολυστάφυλος πέμπει,
ἀμβρότων ἐπέων
εὐαζόντων, Θηβαΐας ἐπισκοποῦντ' ἀγυιάς.

Scan this passage.

(9) ἡδ' ὀξυθήκτῳ βωμία περὶ ξίφει
λύει κελαινὰ βλέφαρα, κωκύσασα μὲν

τοῦ πρὶν θανόντος Μεγαρέως κλεινὸν λάχος,
αὖθις δὲ τοῦδε, λοίσθιον δὲ σοὶ κακὰς.
πράξεις ἐφυμνήσασα τῷ παιδοκτόνῳ.

MSS. ἦδ' ὀξύθηκτος βωμία πέριξ and λέχος for λάχος.

CLASSICAL HONOURS (THIRD AND FOURTH YEARS).

PINDAR (SELECTIONS).

THURSDAY, MARCH 30TH:—MORNING, 9 TO 12.

1. Translate, with notes:—

(a) ἔννεπε κρυφᾷ τις αὐτίκα φθονερῶν γειτόνων,
ὕδατος ὅτι σε πυρὶ ζέοισαν εἰς ἀκμάν
μαχαίρᾳ τάμον κατὰ μελη,
τραπέζαισί τ' ἀμφὶ δεύτατα κρεῶν
σέθεν διεδάσαντο καὶ φάγον.
ἐμοὶ δ' ἄπορα γαστρίμαργον μακάρων τιν' εἰπεῖν·
ἀφίσταμαι·
ἀκέρδεια λέλογχεν θαμινὰ κακαγόρος.
εἰ δὲ δή τιν' ἄνδρα θνατὸν Ὀλύμπου σκοποί
ἐτίμασαν, ἦν Τάνταλος οὗτος·

(b) Ὦ Φίντις, ἀλλὰ ζεῦξον ἤδη μοι σθένος ἡμιόνων,
ᾇ τάχος, ὄφρα κελεύθῳ τ' ἐν καθαρᾷ
βάσομεν ὄκχον, ἵκωμαι δὲ πρὸς ἀνδρῶν
καὶ γένος· κεῖναι γὰρ ἐξ ἀλλᾶν ὁδὸν ἀγεμονεῦσαι
ταύταν ἐπίστανται, στεφάνους ἐν Ὀλυμπίᾳ
ἐπεὶ δέξαντο· χρὴ τοίνυν πύλας ὕμνων ἀναπιτνάμεν
αὐταῖς·
πρὸς Πιτάναν δὲ παρ' Εὐρώτα πόρον δεῖ σάμερόν
μ' ἐλθεῖν ἐν ὥρᾳ·

(c) ἐκέλευσεν δ' αὐτίκα χρυσάμπυκα μὲν Λάχεσιν

χεῖρας ἀντεῖναι, θεῶν δ' ὅρκον μέγαν
μὴ παρφάμεν,
ἀλλὰ Κρόνου σὺν παιδὶ νεῦσαι, φαεννὸν ἐς αἰθέρα νιν
πεμφθεῖσαν ἑᾷ κεφαλᾷ
ἐξοπίσω γέρας ἔσσεσθαι. τελεύταθεν δὲ λόγων κορυφαί
ἐν ἀλαθείᾳ πετοῖσαι· βλάστε μὲν ἐξ ἁλὸς ὑγρᾶς
νᾶσος, ἔχει τέ νιν ὀξειᾶν ὁ γενέθλιος ἀκτίνων πατήρ,
πῦρ πνεόντων ἀρχὸς ἵππων.

(d) ἔνθα συγκωμάξατ'· ἐγγυάσομαι
ὔμμιν. ὦ Μοῖσαι, φυγόξενον στρατόν,
μηδ' ἀπείρατον καλῶν,
ἀκρόσοφον δὲ καὶ αἰχματὰν ἀφίξεσθαι. τὸ γάρ
ἐμφυὲς οὔτ' αἴθων ἀλώπηξ
οὐδ' ἐρίβρομοι λέοντες διαλλάξαιντο ἦθος.

(e) κερδοῖ δὲ τί μάλα τοῦτο κερδαλέον τελέθει;
ἄτε γὰρ εἰνάλιον πόνον ἐχοίσας βαθύ
σκευᾶς ἑτέρας, ἀβάπτιστός εἰμι, φελλὸς ὣς ὑπὲρ
ἔρκος ἅλμας.
ἀδύνατα δ' ἔπος ἐκβαλεῖν κραταιὸν ἐν ἀγαθοῖς
δόλιον ἀστόν· ὅμως μὰν σαίνων ποτὶ πάντας ἄγαν
πάγχυ διαπλέκει.
οὔ οἱ μετέχω θράσεος. φίλον εἴη φιλεῖν.
ποτὶ δ' ἐχθρὸν ἄτ' ἐχθρὸς ἐὼν λύκοιο δίκαν ὑποθεύσομαι,
ἄλλ' ἄλλοτε πατέων ὁδοῖς σκολιαῖς.
ἐν πάντα δὲ νόμον εὐθύγλωσσος ἀνὴρ προφέρει,
παρὰ τυραννίδι, χὠπόταν ὁ λάβρος στρατός,
χὤταν πόλιν οἱ σοφοὶ τηρέωντι. χρὴ δὲ πρὸς θεὸν
οὐκ ἐρίζειν,
ὃς ἀνέχει τοτὲ μὲν τὰ κείνων, τότ' αὖθ' ἑτέροις ἔδωκεν
μέγα κῦδος.

(*f*) καί ῥ' ἦλθον Πελία μέγαρον·
ἐσσύμενοι δ' εἴσω κατέσταν. τῶν δ' ἀκούσαις αὐτὸς ὑπαντίασεν
Τυροῦς ἐρασιπλοκάμου γενεά· πραὺν δ' Ἰάσων
μαλθακᾷ φωνᾷ ποτιστάζων ὄαρον
βάλλετο κρηπῖδα σοφῶν ἐπέων· Παῖ Ποσειδᾶνος Πετραίου,
ἐντὶ μὲν θνατῶν φρένες ὠκύτεραι
κέρδος αἰνῆσαι πρὸ δίκας δόλιον, τραχεῖαν ἑρπόντων πρὸς ἔπιβδαν ὅμως·
ἀλλ' ἐμὲ χρὴ καὶ σὲ θεμισσαμένους ὀργὰς ὑφαίνειν λοιπὸν ὅλβον.
εἰδότι τοι ἐρέω· μία βοῦς Κρηθεῖ τε μάτηρ,
καὶ θρασυμήδεϊ Σαλμωνεῖ· τρίταισιν δ' ἐν γοναῖς
ἄμμες αὖ κείνων φυτευθέντες σθένος ἀελίου χρυσέου
λεύσσομεν. Μοῖραι δ' ἀφίσταντ', εἴ τις ἔχθρα πέλῃ
ὁμογόνοις, αἰδῶ καλύψαι.

(*g*) ἔν τ' ἀέθλοισι θίγον πλείστων ἀγώνων,
καὶ τριπόδεσσιν ἐκόσμησαν δόμον
καὶ λεβήτεσσιν φιάλαισί τε χρυσοῦ,
γευόμενοι στεφάνων
νικαφόρων· λάμπει δὲ σαφὴς ἀρετά
ἔν τε γυμνοῖσι σταδίοις σφίσιν ἔν τ' ἀσπιδοδούποισιν ὁπλίταις δρόμοις·
οἷά τε χερσὶν ἀκοντίζοντες αἰχμαῖς,
καὶ λιθίνοις ὁπότ' ἐκ δίσκοις ἵεν.

(*h*) πολέμου δ' εἰ σᾶμα φέρεις τινός, ἢ στάσιν ὠλομέναν,
ἢ παγετὸν καρποῦ φθίσιν, ἢ νιφετοῦ σθένος ὑπέρφατον,
ἢ πόντου κενέωσιν ἀνὰ πέδον
χθονός, ἢ νότιον θέρος,
ὕδατι ζακότῳ ξεράν
εἰ γαῖαν κατακλύσαισα θήσεις

ἀνδρῶν νέον ἐξ ἀρχᾶς γένος,
ὀλοφύρομαι οὐδὲν ὅ τι πάντων μέτα πείσομαι.

2. Comment on :—

(*a*) ὅπιν δίκαιον ζένων.

(*b*) θάμα μὲν φόρμιγγι παμφώνοισί τ' ἐν ἔντεσιν αὐλῶν.

(*c*) νώτοισιν Ἀταρβυρίου μεδέων.

(*d*) ἀγησιχόρων ὁπόταν προοιμίων ἀμβολὰς τεύχῃς ἐλελιζομένα.

(*e*) ἀνὰ βωλακίας δ' ὀρόγυιαν σχίζε νῶτον γᾶς.

3. Discuss the following MS. readings :—

(*a*) ὅθεν σπέρματος ἔχοντι ῥίζαν πρέπει
τὸν Αἰνησιδάμου
ἐγκωμίων τε μελέων λυρᾶν τε τυγχάνεμεν.

(*b*) ἑπτὰ δ' ἔπειτα πυρᾶν νεκρῶν τελεσθέντων.

(*c*) ἐκ θεοῦ δ' ἀνὴρ σοφαῖς ἀνθεῖ πραπίδεσσιν ὅμως ὤν.

(*d*) Αἴσονος γὰρ παῖς ἐπιχώριος οὐ ξείναν ἱκόμαν γαῖαν ἄλλων.

(*e*) ἐνθ' ἀγὼν Ποσειδάωνος ἔσσαντ' εἰναλίου τέμενος.

(*f*) ἐν ἐσλοῦ Πέλοπος πτυχαῖς.

4. Explain the forms δίδοι, ἐπικύρσαις, γεγάκειν, τόκα, νικώντεσσιν, ἴσαμι, and discuss the Syntax of εἴ τι ποναθῇ.

5. What are the metres chiefly used by Pindar? Illustrate from the above extracts.

6. Discuss the Pindaric treatment of the myth, illustrating from any of these odes.

7. Collect Historical allusions in these odes.

CLASSICAL HONOURS (*Third and Fourth Year*).

EURIPIDES AND HOMER.

SATURDAY, APRIL 15TH:—AFTERNOON, 2 TO 5.

A.—EURIPIDES, HERCULES, FUREUS.

1. Translate and comment on :—

(*a*) AM. *ὦ θύγατερ, οὗτοι ῥᾴδιον τὰ τοιάδε*
φαύλως περαίνειν σπουδάσαντ' ἄνευ πόνου.
MSS. *παραινεῖν.*

(*b*) XO. *ὑπόροφα μέλαθρα*
καὶ γεραιὰ δέμνι', ἀμφὶ βάκτροις
ἐρείσμα θέμενος, ἐστάλην ἰηλέμων
γέρων ἀοιδὸς ὥστε πολιὸς ὄρνις,
MSS. *ὑπώροφα : γόων.*

(*c*) XO. *ὦ γῆς λοχεύμαθ', οὓς Ἄρης σπείρει ποτὲ*
λάβρον δράκοντος ἐξερημώσας γένυν,
οὐ σκῆπτρα χειρὸς δεξιᾶς ἐρείσματα
ἀρεῖτε καὶ τοῦδ' ἀνδρὸς ἀνόσιον κάρα
καθαιματώσεθ', ὅστις οὐ Καδμεῖος ὢν
ἄρχει κάκιστος τῶν νέων ἔπηλυς ὤν ;

What emendations have been suggested in the last line?

(*d*) *ἡμᾶς δ' ἐπειδὴ δεῖ θανεῖν, θνήσκειν χρεὼν*
μὴ πυρὶ καταξανθέντας, ἐχθροῖσιν γέλων
διδόντας, οὐμοὶ τοῦ θανεῖν μεῖζον κακόν.

What correction is necessary in the second line ?

(*e*) *αἳ φονίαισι φάτναις*
ἀχάλιν' ἐθοάζον
κάθαιμα σῖτα γένυσι, χαρμοναῖσιν
ἀνδροβρῶσι δυστράπεζοι·
περῶν δ' ἀργυρορρύταν Ἔβρου

ἐξέπραξε μόχθον,
Μυκηναίῳ πονῶν τυράννῳ.
MSS. πέραν: διεπέρασ' ὄχθον.
Wil. ἀργυρορρύτων: ὄχθων.

(*f*) HP. τι φής; τί ταρβῶν ὀρφάνευμ' ἐμῶν τέκνων;
ME. μή ποτε Κρέοντος θάνατον ἐκτισαίατο.
HP. κόσμος δὲ παίδων τίς ὅδε νερτέροις πρέπων;
ME. θανάτου τάδ' ἤδη περιβόλαι' ἐνήμμεθα.
HP. καὶ πρὸς βίαν ἐθνήσκετ'; ὦ τλήμων ἐγώ.
ME. φίλων ἔρημοι, σὲ δὲ θανόντ' ἠκούομεν.

(*g*) ἰώ μοι μέλεος. ἰὼ Ζεῦ, τὸ σὸν γένος ἄγονον αὐτίκα
λύσσα ξέ σ' ὠμόβροτος ἀποινόδικοι Ποιναὶ
κακοῖσιν ἐκπετάσουσιν. (sic MSS.).

(*h*) τί μοι προσείων χεῖρα σημαίνεις φόνον;
ὡς μὴ μύσος με σῶν βάλῃ προσφθεγμάτων;
οὐδὲν μέλει μοι σύν γε σοὶ πράσσειν κακῶς·
καὶ γάρ ποτ' ηὐτύχησ'· ἐκεῖσ' ἀνοιστέον,
ὅτ' ἐξέσωσάς μ' εἰς φάος νεκρῶν πάρα.

2. Correct the following MSS. readings:—

(*a*) μὴ προκάμητε πόδα βαρύ τε κῶλον, ὥστε πρὸς πετραῖον
λέπας ξυγηφόρον κῶλ' ἀνέντας
ὡς βάρος φέρον τροχηλάτοιο πώλου.

(*b*) HP. πράσσω δ' ἐγώ τι λυπρὸν οὐ δακρυρροεῖς;
AM. ἀκανθεὼν τις εἶπαθ' οἱ καταστένοι;

3. Comment on:—

(*a*) τοῖσι γῆς βλαστήμασι Γίγασι πλευροῖς πτήν'
ἐναρμόσας βέλη...

(*b*) ἡμῶν δ' ἕκατι δεσπόταις θυμούμενοι πάθητε
μηδέν.

(*c*) πεύκαισιν ὄθεν χέρας πληροῦντες. . .

(*d*) σοὶ μὲν γὰρ Ἄργος ἔνεμ' ὁ κατθανὼν πατήρ.

(*e*) ἔτι τὰν Ἡρακλέους καλλίνικον ἀείδω.

(*f*) ἀπόλεμον, ὦ παῖ, πόλεμον ἔσπευσας τέκνοις.

4. Translate :—

μέλλων δὲ δαλὸν χειρὶ δεξιᾷ φέρειν,
εἰς χέρνιβ' ὡς βάψειεν, Ἀλκμήνης τόκος
ἔστη σιωπῇ. καὶ χρονίζοντος πατρὸς
παῖδες προσέσχον ὄμμ'· ὁ δ' οὐκέθ' αὑτὸς ἦν,
ἀλλ' ἐν στροφαῖσιν ὀμμάτων ἐφθαρμένος
ῥίζας τ' ἐν ὄσσοις αἱματωπὸς ἐκβαλών,
ἀφρὸν κατέσταζ' εὐτρίχου γενειάδος.
ἔλεξε δ' ἅμα γέλωτι παραπεπληγμένῳ·
πάτερ, τί θύω πρὶν κτανεῖν Εὐρυσθέα
καθάρσιον πῦρ, καὶ πόνους διπλοῦς ἔχω
ἐξὸν μιᾶς μοι χειρὸς εὖ θέσθαι τάδε;
ὅταν δ' ἐνέγκω δεῦρο κρᾶτ' Εὐρυσθέως,
ἐπὶ τοῖσι νῦν θανοῦσιν ἁγνιῶ χέρας.

5. Illustrate the "rationalistic" position of Euripides from (*a*) the general scheme of this play, (*b*) incidental points in it.

B.—ILIAD, XVI-XVIII.

1. Translate :—

(*a*) Αἴας δ' οὐκέτ' ἔμιμνε· βιάζετο γὰρ βελέεσσιν·
δάμνα μιν Ζηνός τε νόος καὶ Τρῶες ἀγαυοὶ
βάλλοντες· δεινὴν δὲ περὶ κροτάφοισι φαεινὴ
πήληξ βαλλομένη καναχὴν ἔχε, βάλλετο δ' αἰεὶ
κὰπ φάλαρ' εὐποίηθ'.

Comment on (i) the position of φαεινὴ (ii) φάλαρα.

(*b*) ὅμαδος δ' ἀλίαστος ἐτύχθη·
ὡς δ' ὅτ' ἀφ' ὑψηλῆς κορυφῆς ὄρεος μεγάλοιο
κινήσῃ πυκινὴν νεφέλην στεροπηγερέτα Ζεύς,
ἔκ τ' ἔφανεν πᾶσαι σκοπιαὶ καὶ πρώονες ἄκροι
καὶ νάπαι, οὐρανόθεν δ' ἄρ' ὑπερράγη ἄσπετος αἰθήρ,
ὣς Δαναοὶ νηῶν μὲν ἀπωσάμενοι δήιον πῦρ
τυτθὸν ἀνέπνευσαν, πολέμου δ' οὐ γίγνετ' ἐρωή·

Comment on στεροπηγερέτα: ἔφανεν.

(*c*) τοῖς δὲ πανημερίοις ἔριδος μέγα νεῖκος ὀρώρειν
ἀργαλέης· καμάτῳ δὲ καὶ ἱδρῷ νωλεμὲς αἰεὶ
γούνατά τε κνῆμαί τε πόδες δ' ὑπένερθεν ἑκάστου
χεῖρές τ' ὀφθαλμοί τε παλάσσετο μαρναμένοισιν
ἀμφ' ἀγαθὸν θεράποντα ποδώκεος Αἰακίδαο.
ὡς δ' ὅτ' ἀνὴρ ταύροιο βοὸς μεγάλοιο βοείην
λαοῖσιν δώῃ τανύειν, μεθύουσαν ἀλοιφῇ.
δεξάμενοι δ' ἄρα τοί γε διαστάντες τανύουσιν
κυκλόσ', ἄφαρ δέ τε ἰκμὰς ἔβη, δύνει δέ τ' ἀλοιφὴ
πολλῶν ἑλκόντων, τάνυται δέ τε πᾶσα διαπρό·
ὣς οἵ γ' ἔνθα νέκυν ὀλίγῃ ἐνὶ χώρῃ
ἕλκεον ἀμφότεροι.

Comment on ὀρώρειν, παλάσσετο, δώῃ

(*d*) βῆ δ' ἰέναι, ὥς τίς τε λέων ἀπὸ μεσσαύλοιο,
ὅς τ' ἐπεὶ ἄρ κε κάμῃσι κύνας τ' ἄνδρας τ' ἐρεθίζων,
οἵ τέ μιν οὐκ εἰῶσι βοῶν ἐκ πῖαρ ἑλέσθαι
πάννυχοι ἐγρήσσοντες· ὁ δὲ κρειῶν ἐρατίζων
ἰθύει, ἀλλ' οὔ τι πρήσσει· θαμέες γὰρ ἄκοντες
ἀντίον αἴσσουσι θρασειάων ἀπὸ χειρῶν,
καιόμεναί τε δεταί, τάς τε τρεῖ ἐσσύμενός περ.

Comment on ἐπεὶ ἄρ κε κάμῃσι, οἵ τε.

(*e*) ὣς εἰπὼν τὴν μὲν λίπεν αὐτοῦ, βῆ δ' ἐπὶ φύσας,
τὰς δ' ἐς πῦρ ἔτρεψε κέλευσέ τε ἐργάζεσθαι.

φυσαι δ' ἐν χοάνοισιν ἐείκοσι πᾶσαι ἐφύσων,
παντοίην εὔπρηστον ἀυτμὴν ἐξανιεῖσαι,
ἄλλοτε μὲν σπεύδοντι παρέμμεναι, ἄλλοτε δ' αὖτε,
ὅππως Ἥφαιστός τ' ἐθέλοι καὶ ἔργον ἄνυτο.
χαλκὸν δ' ἐν πυρὶ βάλλεν ἀτειρέα κασσίτερόν τε
καὶ χρυσὸν τιμῆντα καὶ ἄργυρον· αὐτὰρ ἔπειτα
θῆκεν ἐν ἀκμοθέτῳ μέγαν ἄκμονα, γέντο δὲ χειρὶ
ῥαιστῆρα κρατερόν, ἑτέρηφι δὲ γέντο πυράγρην.

Comment on ἄνυτο, τιμῆντα, γέντο.

(*f*). ἐν δ' ἐτίθει τέμενος βασιλήιον. ἔνθα δ' ἔριθοι
ἤμων ὀξείας δρεπάνας ἐν χερσὶν ἔχοντες.
δράγματα δ' ἄλλα μετ' ὄγμον ἐπήτριμα πῖπτον ἔραζε,
ἄλλα δ' ἀμαλλοδετῆρες ἐν ἑλλεδανοῖσι δέοντο.
τρεῖς δ' ἄρ' ἀμαλλοδετῆρες ἐφέστασαν· αὐτὰρ ὄπισθεν,
παῖδες δραγμεύοντες, ἐν ἀγκαλίδεσσι φέροντες,
ἀσπερχὲς πάρεχον. βασιλεὺς δ' ἐν τοῖσι σιωπῇ
σκῆπτρον ἔχων ἑστήκει ἐπ' ὄγμου γηθόσυνος κῆρ.
κήρυκες δ' ἀπάνευθεν ὑπο δρυΐ δαῖτα πένοντο,
βοῦν δ' ἱερεύσαντες μέγαν ἄμφεπον· οἱ δὲ γυναῖκες
δεῖπνον ἐρίθοισιν λεύκ' ἄλφιτα πολλὰ πάλυνον.

Comment on ἐτίθει, βασιλήιον, ἐφέστασαν.

2. What portions of these Books may be considered to belong to the Original Iliad ?

CLASSICAL HONOURS (*Third and Fourth Years*).

DEMOSTHENES, DE CORONA.

TUESDAY, APRIL 18TH :—MORNING, 9 TO 12.

1. Translate, with notes :—

(*a*) ἐξὸν ἡμερῶν δέκα, ὁμῶς δὲ τριῶν ἢ τεττάρων, εἰς τὸν Ἑλλήσποντον ἀφῖχθαι καὶ τὰ χωρία σῶσαι, λαβόντας τοὺς ὅρκους πρὶν ἐκεῖνον ἐξελεῖν αὐτά.

(*b*) τίνες οὖν ἦσαν οἱ παρὰ τούτου λόγοι τότε ῥηθέντες, καὶ δι' οὓς ἅπαντ' ἀπώλετο ; ὡς οὐ δεῖ θορυβεῖσθαι τῷ παρεληλυθέναι Φίλιππον εἴσω Πυλῶν.

(*c*) αἱ δὲ πόλεις ἐνόσουν τῶν μὲν ἐν τῷ πολιτεύεσθαι καὶ πράττειν δωροδοκούντων καὶ διαφθειρομένων ἐπὶ χρήμασι, τῶν δὲ ἰδιωτῶν καὶ πολλῶν τὰ μὲν οὐ προορωμένων, τὰ δὲ τῇ καθ' ἡμέραν ῥᾳστώνῃ καὶ σχολῇ δελεαζομένων, καὶ τοιουτονί τι πάθος πεπονθότων ἁπάντων, πλὴν οὐκ ἐφ' ἑαυτοὺς ἑκάστων οἰομένων τὸ δεινὸν ἥξειν, ἀλλὰ διὰ τῶν ἑτέρων κινδύνων τὰ ἑαυτῶν ἀσφαλῶς σχήσειν, ὅταν βούλωνται.

(*d*) καὶ μὴν οὐδὲ τοῦτό γε οὐδεὶς ἂν εἰπεῖν τολμήσαι, ὡς τῷ μὲν ἐν Πέλλῃ τραφέντι, χωρίῳ ἀδόξῳ τότε γε ὄντι καὶ μικρῷ, τοσαύτην μεγαλοψυχίαν προσῆκεν ἐγγενέσθαι ὥστε τῆς τῶν Ἑλλήνων ἀρχῆς ἐπιθυμῆσαι καὶ τοῦτ' εἰς τὸν νοῦν ἐμβαλέσθαι, ὑμῖν δ' οὖσιν Ἀθηναίοις καὶ κατὰ τὴν ἡμέραν ἑκάστην ἐν πᾶσι καὶ λόγοις καὶ θεωρήμασι τῆς τῶν προγόνων ἀρετῆς ὑπομνήμαθ' ὁρῶσι τοσαύτην κακίαν ὑπάρξαι ὥστε τῆς τῶν Ἑλλήνων ἐλευθερίας αὐτεπαγγέλτους ἐθελοντὰς παραχωρῆσαι Φιλίππῳ.

(*e*) στεφανωσάντων τοίνυν ὑμῶν ἐμὲ ἐπὶ τούτοις τοτε, καὶ γράψαντος Ἀριστονίκου τὰς αὐτὰς συλλαβὰς ἅσπερ

οὑτοσὶ Κτησιφῶν νῦν γέγραφε, καὶ ἀναρρηθέντος ἐν τῷ θεάτρῳ τοῦ στεφάνου, καὶ δευτέρου κηρύγματος ἤδη μοι τούτου γιγνομένου, οὔτ' ἀντεῖπεν Αἰσχίνης παρὼν οὔτε τὸν εἰπόντα ἐγράψατο.

(*f*) ὁρῶν γὰρ, ὦ ἄνδρες Ἀθηναῖοι, τὸ ναυτικὸν ὑμῶν καταλυόμενον, καὶ τοὺς μεν πλουσίους ἀτελεῖς ἀπὸ μικρῶν ἀναλωμάτων γιγνομένους, τοὺς δὲ μέτρια ἢ μικρὰ κεκτημένους τῶν πολιτῶν τὰ ὄντα ἀπολλύντας, ἔτι δ' ὑστερίζουσαν ἐκ τούτων τὴν πόλιν τῶν καιρῶν, ἔθηκα νόμον καθ' ὃν τοὺς μὲν τὰ δίκαια ποιεῖν ἠνάγκασα, τοὺς πλουσίους, τοὺς δὲ πένητας ἔπαυσ' ἀδικουμένους, τῇ πόλει δ' ὅπερ ἦν χρησιμώτατον, ἐν καιρῷ γίγνεσθαι τὰς παρασκευὰς ἐποίησα. καὶ γραφεὶς τὸν ἀγῶνα τοῦτον εἰς ὑμᾶς εἰσῆλθον καὶ ἀπέφυγον, καὶ τὸ μέρος τῶν ψήφων ὁ διώκων οὐκ ἔλαβεν. καίτοι πόσα χρήματα τοὺς ἡγεμόνας τῶν συμμοριῶν ἢ τούς δευτέρους καὶ τρίτους οἴεσθέ μοι διδόναι ὥστε μάλιστα μὲν μὴ θεῖναι τὸν νόμον τοῦτον, εἰ δὲ μὴ, καταβαλόντα ἐᾶν ἐν ὑπωμοσίᾳ;

(*g*) οὐδὲ γὰρ ὧν ἔτυχεν ἦν, ἀλλ' οἷς ὁ δῆμος καταρᾶται. ὀψὲ γάρ ποτε—, ὀψὲ λέγω; χθὲς μὲν οὖν καὶ πρώην ἅμ' Ἀθηναῖος καὶ ῥήτωρ γέγονε.

(*h*) οὐκ ἐνῆν ἄνευ τοῦ προσκαλέσασθαι δήπου τοῖς Λοκροῖς δίκην κατὰ τῆς πόλεως τελέσασθαι.

(*i*) τούτων οὖν οὕτως ἐχόντων τί προσῆκεν ἢ τι δίκαιον ἦν τοῖς ὑπ' ἐμοῦ πεπραγμένοις θέσθαι τὸν Κτησιφῶντα ὄνομα.

(*k*) ὡς δ' ἀπηλλάγης ποτὲ καὶ τούτου, πάνθ' ἃ τῶν ἄλλων κατηγορεῖς αὐτὸς ποιήσας, οὐ κατῄσχυνας μὰ Δί' οὐδὲν τῶν προϋπηργμένων τῷ μετὰ ταῦτα βίῳ, ἀλλὰ μισθώσας σαυτὸν τοῖς βαρυστόνοις ἐπικαλουμένοις ἐκείνοις ὑποκριταῖς, Σιμύλῳ καὶ Σωκράτει, ἐτριταγωνίστεις, σῦκα

καὶ βότρυς καὶ ἐλάας συλλέγων ὥσπερ ὀπωρώνης ἐκ τῶν ἀλλοτρίων, πλείω λαμβάνων ἀπὸ τούτων τραύματα ἢ τῶν ἀγώνων, οὓς ὑμεῖς περὶ τῆς ψυχῆς ἠγωνίζεσθε· ἦν γὰρ ἄσπονδος καὶ ἀκήρυκτος ὑμῖν πρὸς τοὺς θεατὰς πόλεμος, ὑφ' ὧν πολλὰ τραύματ' εἰληφὼς εἰκότως τοὺς ἀπείρους τῶν τοιούτων κινδύνων ὡς δειλοὺς σκώπτεις.

(*l*) οὔτ' ἀδικῶν τις οὔτ' ἐξαμαρτάνων, εἰς τὰ πᾶσι δοκοῦντα συμφέρειν ἑαυτὸν δοὺς οὐ κατώρθωσε μεθ' ἁπάντων· οὐκ ἐνειδίζειν οὐδὲ λοιδορεῖσθαι τῷ τοιούτῳ δίκαιον, ἀλλὰ συνάχθεσθαι.

(*m*) οὗτοι πάντες εἰσὶν, ἄνδρες Ἀθηναῖοι, τῶν βουλευμάτων ἐν ταῖς αὑτῶν πατρίσιν ὥνπερ οὗτοι παρ' ὑμῖν, ἄνθρωποι μιαροὶ καὶ κόλακες καὶ ἀλάστορες. ἠκρωτηριασμενοι τὰς ἑαυτῶν ἕκαστοι πατρίδας, τὴν ἐλευθερίαν προπεπωκότες πρότερον μὲν Φιλίππῳ, νῦν δὲ Ἀλεξάνδρῳ, τῇ γαστρὶ μετροῦντες καὶ τοῖς αἰσχίστοις τὴν εὐδαιμονίαν, τὴν δ' ἐλευθερίαν καὶ τὸ μηδένα ἔχειν δεσπότην αὑτῶν, ἃ τοῖς προτέροις Ἕλλησιν ὅροι τῶν ἀγαθῶν ἦσαι καὶ κανόνες, ἀνατετροφότες.

(*n*) ὅστις, ὦ πάντων ἀδικώτατε, οὐδ' ὅτε ἅπαντες, ὅσοι πώποτ' ἐφθέγξαντ' ἐπὶ τοῦ βήματος, εἰς σωτηρίαν ἐπεδίδοσαν, καὶ τὸ τελευταῖον Ἀριστονικος τὸ συνειλεγμένον εἰς τὴν ἐπιτιμίαν ἀργύριον, οὐδὲ τότε οὔτε παρῆλθες οὔτ' ἐπέδωκας οὐδὲν, οὐκ ἀπορῶν, πῶς γάρ; ὃς γε κεκληρονόμηκας μὲν τῶν Φίλωνος τοῦ κηδεστοῦ χρημάτων πλειόνων ἢ πεντεταλάντων, δικάλαντον δ' εἶχες ἔρανον δωρεὰν παρὰ τῶν ἡγεμόνων τῶν συμμοριῶν ἐφ' οἷς ἐλυμήνω τὸν τριηραρχικὸν νόμον.

2. Explain the historical allusions in :—

(*a*) ἵν' ἐχόντων τῶν Θρᾳκῶν ταῦτα τὰ χωρία, ἃ οὗτος διέσυρε, τὸ Σέρρειον καὶ τὸ Μυρτηνὸν καὶ τὴν Ἐργίσκην, οὕτω γίγνοιντ' οἱ ὅρκοι.

(*b*) Εὐβούλου καὶ Ἀριστοφῶντος καὶ Διοπείθους τῶν περὶ τούτων ψηφισμάτων ὄντων.

(*c*) τοὺς ἀποστόλους ἅπαντας ἀπέστειλα, καθ' οὓς χερρόνησος ἐσώθη.

(*d*) ἀλλὰ πάλιν σφετεριζομένων Θηβαίων τὴν Εὔβοιαν οὐ περιείδετε, οὐδ' ὧν ὕπὸ Θεμίσωνος καὶ Θεοδώρου περὶ Ὠρωπὸν ἠδίκησθ' ἀνεμνήσθητε.

(*e*) χρημάτων δὲ σύνταξιν εἰς πέντε καὶ τετταράκοντα τάλαντα.

(*f*) Χειροτονῶν γὰρ ὁ δῆμος τὸν ἐροῦντ' ἐπὶ τοῖς τετελευτηκόσι παρ' αὐτὰ τὰ συμβάντ' οὐ σὲ ἐχειρότονησεν προβληθέντα.

3. On what grounds are the following passages condemned as spurious:—

(*a*) μηδένα Ἀηναίων μηδεμιᾷ παρευρέσει ἐν τῇ χώρᾳ κοιταῖον γίγνεσθαι, ἀλλ' ἐν ἄστει καὶ Πειραιεῖ, ὅσοι μὴ ἐν τοῖς φρουρίοις εἰσὶν ἀποτεταγμένοι.

(*b*) ὡς ἄρα Λεωδάμαντα τὸν ναύαρχον καὶ τὰ μετ' αὐτοῦ ἀποσταλέντα σκάφη εἴκοσιν ἐπὶ τὴν τοῦ σίτου παραπομπὴν εἰς Ἑλλήσποντον ὁ παρὰ Φιλίππου στρατηγὸς Ἀμύντας καταγήοχεν εἰς Μακεδονίαν καὶ ἐν φυλακῇ ἔχει.

(*c*) Νομος. Ὅσους στεφανοῦσί τινες τῶν δήμων, τὰς ἀναγορεύσεις τῶν στεφάνων ποιεῖσθαι ἐν αὐτοῖς ἑκάστους τοῖς ἰδίοις δήμοις, ἐὰν μή τινας ὁ δῆμος ὁ τῶν Ἀθηναίων ἢ ἡ βουλὴ στεφανοῖ· τούτους δ' ἐξεῖναι ἐν τῷ θεάτρῳ Διονυσίοις ἀναγορεύεσθαι.

(*d*) εἰδέναι Αἰσχίνην Ἀτρομήτου Κοθωκίδην συνερχόμενον νυκτὸς εἰς τὴν Θράσωνος οἰκίαν καὶ κοινολογούμε-

νον Ἀναξίνῳ, ὃς ἐκρίθη εἶναι κατάσκοπος παρὰ Φιλίππου. αὗται ἀπεδόθησαν αἱ μαρτυρίαι ἐπὶ Νικίου, ἑκατομβαιῶνος τρίτῃ ἱσταμένου.

4. Criticize this speech from a forensic stand-point, showing especially how Demosthenes minimizes the importance of the technical points. In what ways does it fail to conform to the ordinary structure of an Athenian speech? Give an analysis in outline.

CLASSICAL HONOURS (*Third and Fourth Year*).

TRANSLATION AT SIGHT.

TUESDAY, APRIL 18TH:—AFTERNOON, 2 TO 5.

A. For Third and Fourth Years.

(1) ὧν ἐνθυμηθέντες καὶ νεώτερός τις παρὰ πρεσβυτέρου αὐτὰ μαθὼν ἀξιούτω τοῖς ὁμοίοις ἡμᾶς ἀμύνεσθαι, καὶ μὴ νομίσῃ δίκαια μὲν τάδε λέγεσθαι, ξύμφορα δὲ, εἰ πολεμήσει, ἄλλα εἶναι. τό τε γὰρ ξυμφέρον ἐν ᾧ ἄν τις ἐλάχιστα ἁμαρτάνῃ μάλιστα ἕπεται, καὶ τὸ μέλλον τοῦ πολέμου, ᾧ φοβοῦντες ὑμᾶς Κερκυραῖοι κελεύουσιν ἀδικεῖν, ἐν ἀφανεῖ ἔτι κεῖται, καὶ οὐκ ἄξιον ἐπαρθέντας αὐτῷ φανερὰν ἔχθραν ἤδη καὶ οὐ μέλλουσαν πρὸς Κορινθίους κτήσασθαι, τῆς δὲ ὑπαρχούσης πρότερον διὰ Μεγαρέας ὑποψίας σῶφρον ὑφελεῖν μᾶλλον· ἡ γὰρ τελευταία χάρις καιρὸν ἔχουσα, κἂν ἐλάσσων ᾖ, δύναται μεῖζον ἔγκλημα λῦσαι.

(2) Ζηνόθεμις γὰρ οὑτοσὶ ὢν ὑπηρέτης Ἡγεστράτου τοῦ ναυκλήρου, ὃν καὶ αὐτὸς ἔγραψεν ἐν τῷ ἐγκλήματι ὡς ἐν τῷ πελάγει ἀπώλετο (πῶς δ', οὐ προσέγραψεν, ἀλλ' ἐγὼ φρά-

σω) ἀδίκημα τοιουτονὶ μετ' ἐκείνου συνεσκευάσατο. χρήματα ἐν ταῖς Συρακούσαις ἐδανείζετο οὗτος καὶ ἐκεῖνος. ὡμολόγει δ' ἐκεῖνος μὲν πρὸς τοὺς τούτῳ δανείζοντας, εἴ τις ἔροιτο, ἐνεῖναι σῖτον ἐν τῇ νηὶ τούτῳ πολύν, οὑτοσὶ δὲ πρὸς τοὺς ἐκείνῳ τὸν γόμον οἰκεῖον ἔχειν αὐτὸν τῆς νεώς· ὧν δὲ ὁ μὲν ναύκληρος, ὁ δ' ἐπιβάτης, ἐπιστεύοντο εἰκότως ἃ περὶ ἀλλήλων ἔλεγον, λαμβάνοντες δὲ τὰ χρήματα οἴκαδε ἀπέστελλον εἰς τὴν Μασσαλίαν, καὶ οὐδὲν εἰς τὴν ναῦν εἰσέφερον. οὐσῶν δὲ τῶν συγγραφῶν, ὥσπερ εἰώθασιν ἅπασαι, σωθείσης τῆς νεὼς ἀποδοῦναι τὰ χρήμαθ', ἵν' ἀποστερήσαιεν τοὺς δανείσαντας, τὴν ναῦν καταδῦσαι ἐβουλεύσαντο. ὁ μὲν οὖν Ἡγέστρατος, ὡς ἀπὸ τῆς γῆς ἀπῆραν δυοῖν ἢ τριῶν ἡμερῶν πλοῦν, καταβὰς τῆς νυκτὸς εἰς κοίλην ναῦν διέκοπτε τοῦ πλοίου τὸ ἔδαφος.

(3) Ὄφρα μὲν ἠὼς ἦν καὶ ἀέξετο ἱερὸν ἦμαρ,
τόφρα μάλ' ἀμφοτέρων βέλε' ἵπτετο, πίπτε δὲ λαός·
ἦμος δὲ δρυτόμος περ ἀνὴρ ὠπλίσσατο δεῖπνον
οὔρεος ἐν βήσσῃσιν, ἐπεί τ' ἐκορέσσατο χεῖρας
τάμνων δένδρεα μακρά, ἄδος τέ μιν ἵκετο θυμόν,
σίτου τε γλυκεροῖο περὶ φρένας ἵμερος αἱρεῖ,
τῆμος σφῇ ἀρετῇ Δαναοὶ ῥήξαντο φάλαγγας,
κεκλόμενοι ἑτάροισι κατὰ στίχας.

(4) ὦ πολλαὶ δακρύων λιβάδες,
αἳ παρηίδας εἰς ἐμὰς
ἔπεσον, ἀνίκα πύργων
ὀλλυμένων ἐπὶ ναυσὶν ἔβαν
πολεμίων ἐρετμοῖσι καὶ λόγχαις.
ζαχρύσου δὲ δι' ἐμπολᾶς
νᾶσον βάρβαρον ἦλθον,
ἐν ᾗ τᾶς Ἑλλανοφόνου
θεᾶς ἀμφίπολον κόραν
παῖδ' Ἀγαμεμνονίαν λατρεύω
βωμούς τε μηλοθύτους.

B. For Third Year only.

(1) Γελοῖα μὲν οἶμαι φανεῖσθαι, ὦ Ἑρμόγενες, γράμμασι καὶ σύλλαβαῖς τὰ πράγματα μεμιμημένα κατάδηλα γιγνόμενα· ὅμως δὲ ἀνάγκη. οὐ γὰρ ἔχομεν τούτου βέλτιον εἰς ὅ τι ἐπανενέγκωμεν περὶ ἀληθείας τῶν πρώτων ὀνομάτων, εἰ μὴ ἄρα βούλει, ὥσπερ οἱ τραγῳδοποιοί, ἐπειδάν τι ἀπορῶσιν, ἐπὶ τὰς μηχανὰς καταφεύγουσι θεοὺς αἴροντες, καὶ ἡμεῖς οὕτως εἰπόντες ἀπαλλαγῶμεν, ὅτι τὰ πρῶτα ὀνόματα οἱ θεοὶ ἔθεσαν καὶ διὰ ταῦτα ὀρθῶς ἔχει.

(2) Εἰς Ῥόδον εἰ πλεύσει τις Ὀλυμπικὸν ἦλθεν ἐρωτῶν
τὸν μάντιν, καὶ πῶς πλεύσεται ἀσφαλέως.
χὠ μάντις πρῶτον μέν, ἔφη, καινὴν ἔχε τὴν ναῦν,
καὶ μὴ χειμῶνος τοῦ δὲ θέρους ἀνάγου.
τοῦτο γὰρ ἂν ποιῇς, ἥξεις κακεῖσε καὶ ὧδε,
ἂν μὴ πειρατὴς ἐν πελάγει σε λάβῃ.

C. For Fourth Year only.

(1) καλέονται δὲ οὐ κροκόδειλοι ἀλλὰ χάμψαι· κροκοδείλους δὲ Ἴωνες ὠνόμασαν, εἰκάζοντες αὐτῶν τὰ εἴδεα τοῖσι παρὰ σφίσι γινομένοισι κροκοδείλοισι τοῖσι ἐν τῇσι αἱμασιῇσι. ἄγραι δέ σφεων πολλαὶ κατεστᾶσι καὶ παντοῖαι· ἣ δ' ἂν ἔμοιγε δοκέει ἀξιωτάτη ἀπηγήσιος εἶναι, ταύτην γράφω. ἐπεὰν νῶτον ὑὸς δελεάσῃ περὶ ἄγκιστρον, μετίει ἐς μέσον τὸν ποταμόν, αὐτὸς δὲ ἐπὶ τοῦ χείλεος τοῦ ποταμοῦ ἔχων δέλφακα ζωὴν ταύτην τύπτει. ἐπακούσας δὲ τῆς φωνῆς ὁ κροκόδειλος ἵεται κατὰ τὴν φωνήν, ἐντυχὼν δὲ τῷ νώτῳ καταπίνει· οἱ δὲ ἕλκουσι, ἐπεὰν δὲ ἐξελκυσθῇ ἐς γῆν, πρῶτον ἁπάντων ὁ θηρευτὴς πηλῷ κατ' ὧν ἔπλασε αὐτοῦ τοὺς ὀφθαλμούς· τοῦτο δὲ ποιήσας κάρτα εὐπετέως τὰ λοιπὰ χειροῦται, μὴ ποιήσας δὲ τοῦτο σὺν πόνῳ.

(2) Ἔχει δὲ ἀπορίαν εὐθὺς, πῶς τε δεῖ μόρια ψυχῆς λέγειν, καὶ πόσα· τρόπον γάρ τινα ἄπειρα φαίνεται,

καὶ οὐ μόνον ἅ τινες λέγουσι διορίζοντες, λογιστικὸν, καὶ θυμικὸν, καὶ ἐπιθυμητικόν· οἱ δὲ τὸ λόγον ἔχον, καὶ τὸ ἄλογον· κατὰ γὰρ τὰς διαφορὰς, δι' ἃς ταῦτα χωρίζουσι, καὶ ἄλλα φαίνεται μόρια μείζω διάστασιν ἔχοντα τούτων, περὶ ὧν καὶ νῦν εἴρηται, τό τε θρεπτικὸν, ὃ καὶ τοῖς φυτοῖς ὑπάρχει, καὶ πᾶσι τοῖς ζώοις· καὶ τὸ αἰσθητικὸν, ὃ οὔτε ὡς ἄλογον, οὔτε ὡς λόγον ἔχον, θείη ἄν τις ῥᾳδίως. Ἔτι δὲ τὸ φανταστικὸν ὃ τῷ μὲν εἶναι πάντων ἕτερον. Τινὶ δὲ τούτων ταὐτὸν, ἢ ἕτερον, ἔχει πολλὴν ἀπορίαν, εἴ τις θήσει κεχωρισμένα μόρια τῆς ψυχῆς.

CLASSICAL HONOURS—(THIRD AND FOURTH YEARS.)

GREEK PROSE.

WEDNESDAY, APRIL 19TH :—MORNING, 9 TO 12.

FOR FOURTH YEAR.

THE SO-CALLED EMPIRE OF REASON. But now all is to be changed. All the pleasing illusions which made power gentle, and obedience liberal, which harmonized the different shades of life, and which, by a bland assimilation, incorporated into politics the sentiments which beautify and soften society, are to be dissolved by this new conquering empire of light and reason. All the decent drapery of life is to be rudely torn off. All the superadded ideas, furnished from the wardrobe of a moral imagination, which the heart owns, and the understanding ratifies, as necessary to cover the defects of our naked shivering nature, and to raise it to dignity in our own estimation, are to be exploded as a ridiculous, absurd and antiquated fashion.

FOR THIRD YEAR.

MODE OF ESTIMATING ACTIONS. The present action, like every other, is to be considered according to the extent of the injury which the person complaining to a court of justice has received. If he has received an injury or sustained a loss that can be estimated directly in money, there is then no other medium of redress but in moneys, numbered according to the extent of the proof. I apprehend it will not be even stated by the counsel for the defendant,

hat if a person has sustained a loss and can show it is to any given extent, he is not entitled to the full measure of it in damages. If a man destroys my house or furniture, or deprives me of a chattel, I have a right, beyond all manner of doubt, to recover their corresponding values in money; and it is no answer to me to say, that he who has deprived me of the advantage I before possessed, is in no situation to render me satisfaction. It would be a direct breach of the oaths of jurors if, impressed with a firm conviction that a plaintiff has received damages to a given amount, they retired from their duty, because they felt commiseration for a defendant, even in a case where he might be worthy of compassion, from the injury being unpremeditated and inadvertent.

FOURTH YEAR HONOURS IN CLASSICS.

SOPHOCLES, TRACHINIAE: ARISTOPHANES, WASPS: THEOCRITUS.

TUESDAY, APRIL 11TH:—MORNING, 9 TO 12.

A.—SOPHOCLES TRACHINIAE.

1. Translate with notes:—

(*a*) τοιαῦτ' ἔφραζε πρὸς θεῶν εἱμαρμένα
τῶν Ἡρακλείων ἐκτελευτᾶσθαι πόνων,
ὡς τὴν παλαιὰν φηγὸν αὐδῆσαί ποτε
Δωδῶνι δισσῶν ἐκ Πελειάδων ἔφη.
καὶ τώνδε ναμέρτεια συμβαίνει χρόνου
τοῦ νῦν παρόντος, ὡς τελεσθῆναι χρεών.

(*b*) ἀλλ' ἐπὶ τάνδ' ἄρ' ἄκοιτιν
τίνες ἀμφίγυοι κατέβαν πρὸ γάμων,
τίνες πάμπληκτα παγκόνιτά τ' ἐξῆλθον ἄεθλ' ἀγώνων;
ὁ μὲν ἦν ποταμοῦ σθένος, ὑψίκερω τετραόρου
φάσμα ταύρου,
Ἀχελῷος ἀπ' Οἰνιαδᾶν· ὁ δὲ Βακχίας ἀπὸ
ἦλθε παλίντονα Θήβας

τόξα καὶ λόγχας ῥόπαλόν τε τινάσσων,
παῖς Διός· οἳ τότ' ἀολλεῖς
ἴσαν ἐς μέσον ἱέμενοι λεχέων·
ἵνα δ' εὔλεκτρος ἐν μέσῳ Κύπρις ῥαβδονόμει ξυνοῦσα.

(c) ᾧ γὰρ τὸν ἐνδυτῆρα πέπλον ἀρτίως
ἔχριον, ἀργὴς οἷος εὐέρου πόκος,
τοῦτ' ἠφάνισται, διάβορον πρὸς οὐδενὸς
τῶν ἔνδον, ἀλλ' ἐδεστὸν ἐξ αὑτοῦ φθίνει,
καὶ ψῇ κατ' ἄκρας σπιλάδος.

MSS. ἀργητ'. . . πόκῳ.

(d) ὅπως δὲ σεμνῶν ὀργίων ἐδαίετο
φλὸξ αἱματηρὰ κἀπὸ πιείρας δρυός,
ἱδρὼς ἀνῄει χρωτί, καὶ προσπτύσσεται
πλευραῖσιν ἀρτίκολλος, ὥστε τέκτονος,
χιτὼν ἅπαν κατ' ἄρθρον· ἦλθε δ' ὀστέων
ἀδαγμὸς ἀντίσπαστος· εἶτα φοινίας
ἐχθρᾶς ἐχίδνης ἰὸς ὡς ἐδαίνυτο·

(e) εἰ γάρ σφε Κενταύρου φονίᾳ νεφέλᾳ
χρίει δολοποιὸς ἀνάγκα
πλευρά, προστακέντος ἰοῦ,
ὃν τέκετο θάνατος, ἔτρεφε δ' αἰόλος δράκων,
πῶς ὀδ' ἂν ἀέλιον ἕτερον ἢ τὰ νῦν ἴδοι,
δεινοτάτῳ μὲν ὕδρας προστετακὼς
φάσματι; μελαγχαίτα δ' ἄμμιγά νιν αἰκίζει
Νέσσου ὑποφόνια δολιόμυθα κέντρ' ἐπιζέσαντα.

(f) φανῶ δ' ἐγω τούτοισι συμβαίνοντ' ἴσα
μαντεῖα καινά, τοῖς πάλαι ξυνήγορα,
ἃ τῶν ὀρείων καὶ χαμαικοιτῶν ἐγὼ
Σελλῶν ἐσελθὼν ἄλσος εἰσεγραψάμην
πρὸς τῆς πατρῴας καὶ πολυγλώσσου δρυός.

2. Comment on :—

(1) *τὸ γὰρ ποθοῦν ἕκαστος ἐκμαθεῖν θέλων οὐκ ἂν με θεῖτο.*

(2) *ἦ δ' ἔχω, φίλαι, λυτήρων λύπημα, τῆδ' ὑμῖν φράσω* (sic MSS.).

(3) *ἐπεί μοι τὴν θέμιν συ προὔβαλες.*

(4) (*οὐκ ἔγχος τις ἐπιτρέψει*) *οὐδ' ἀπαραξαι κρᾶτα βίου θέλει* ; (sic MSS.).

B.—ARISTOPHANES, WASPS.

1. Translate and explain :—

(*a*) ΒΔΕ. *οὐ περιδραμεῖται σφῷν ταχέως δεῦρ' ἄτερος ;*
ὁ γὰρ πατὴρ εἰς τὸν ἰπνὸν εἰσελήλυθεν
καὶ μυστπολεῖ τι καταδεδυκώς. ἀλλ' ἄθρει,
κατὰ τῆς πυέλου τὸ τρῆμ' ὅπως μὴ κδύσεται·
σὺ δὲ τῇ θύρᾳ πρόσκεισο.
ΞΑΝ. *ταῦτ', ὦ δέσποτα.*
ΒΔΕ. *ἄναξ Πόσειδον, τί ποτ' ἄρ' ἡ κάπνη ψοφεῖ ;*
οὗτος, τίς εἶ σύ ;
ΦΙΛ. *καπνὸς ἔγωγ' ἐξέρχομαι.*
ΒΔΕ. *καπνός ; φέρ' ἰδω, ξύλου τίνος σύ ;*
ΦΙΛ. *συκίνου.*
ΒΔΕ. *νὴ τὸν Δί' ὅσπερ γ' ἐστὶ δριμύτατος καπνῶν.*
ἀτάρ, οὐ γὰρ ἐκφρήσω σε, ποῦ 'σθ' ἡ τηλία ;

(*b*) ΚΟΡ. *ἀλλ' ἐγκονῶμεν, ὦνδρες, ὡς ἔσται Λάχητι νυνί·*
σίμβλον δέ φασι χρημάτων ἔχειν ἅπαντες
αὐτόν.
ἐχθὲς μὲν οὖν ὁ κηδεμὼν ἡμῖν ἐφεῖτ' ἐν ὥρᾳ
ἥκειν ἔχοντας ἡμερῶν — ὀργὴν τριῶν πονηρὰν
ἐπ' αὐτόν, ὡς κολωμένους ὧν ἠδίκηκεν. ἀλλὰ
σπεύδωμεν, ὦνδρες ἥλικες, πρὶν ἡμέραν γενέσθαι.

(c) ἤ με κεραυνῷ διατινθαλέῳ
σπόδισον ταχέως·
κἄπειτ' ἀνελών μ' ἀποφυσήσας
εἰς ὀξάλμην ἔμβαλε θερμήν·
ἢ δῆτα λίθον με πόησον ἐφ' οὗ —
τὰς χοιρίνας ἀριθμοῦσιν.

(d) κἂν αὐλητής γε δίκην νικᾷ, ταύτῃς ἡμὶν ἐπίχειρα
ἐν φορβειᾷ τοῖσι δικασταῖς ἔξοδον ηὕλησ' ἀπιοῦσιν.
κἂν ἀποθνήσκων ὁ πατήρ τῳ δῷ καταλείπων παῖδ'
ἐπίκληρον,
κλάειν ἡμεῖς μακρὰ τὴν κεφαλὴν εἰπόντες τῇ διαθήκῃ
καὶ τῇ κόγχῃ τῇ πάνυ σεμνῶς τοῖς σημείοισιν
ἐπούσῃ,
ἔδομεν ταύτην ὅστις ἂν ἡμᾶς ἀντιβλήσας ἀναπείσῃ.
καὶ ταῦτ' ἀνυπεύθυνοι δρῶμεν· τῶν δ' ἄλλων οὐδεμί'
ἀρχή.

(e) καὶ ταῦτα μέν νυν εὐλόγως· ἢν δ' ἐξέχῃ
εἴλη κατ' ὄρθρον, ἡλιάσει πρὸς ἥλιον,
ἐὰν δὲ νίφῃ, πρὸς τὸ πῦρ καθήμενος·
ὕοντος, εἶσει· κἂν ἔγρῃ μεσημβρινός,
οὐδείς σ' ἀποκλῄσει θεσμοθέτης τῇ κιγκλίδι.

(f) οἱ δ' ἐν ᾠδείῳ δικάζουσ', ὧδε πρὸς τοῖς τειχίοις
ξυμβεβυσμένοι πυκνόν. νεύοντες εἰς τὴν γῆν, μόλις
ὥσπερ οἱ σκώληκες ἐν τοῖς κυττάροις κινούμενοι.
εἰς δὲ τὴν ἄλλην δίαιταν ἐσμεν εὐπορώτατοι.
πάντα γὰρ κεντοῦμεν ἄνδρα κἀκπορίζομεν βίον
ἀλλὰ γὰρ κηφῆνες ἡμῖν εἰσιν ἐγκαθήμενοι,
οὐκ ἔχοντες κέντρον, οἳ μένοντες ἡμῶν τοῦ φόρου
τὸν πόνον κατεσθίουσιν, οὐ ταλαιπωρούμενοι.
τοῦτο δ' ἔστ' ἄλγιστον ἡμῖν, ἤν τις ἀστράτευτος ὢν
ἐκροφῇ τὸν μισθὸν ἡμῶν, τ ῆ σ δ ε τ ῆ ς χ ώ ρ α ς
ὕ π ερ

μήτε κώπην μήτε λόγχην μήτε—
φλύκταιναν λαβών.

2. (*a*) "The Chorus is the heart, the Coryphaeus the head." Explain and criticize this dictum.

(*b*) What is meant by the Ajon of Comedy?

(*c*) States the chief differences between Comedy and Tragedy in the metrical treatment of the Iambic Trimeter.

(*d*) Explain the terms *παρακαταλογή*, *ἁπλᾶ*, *ἀντεπίρρημα*.

C.—THEOCRITUS.

1. Translate and annotate:—

(*a*) ὤ μοι ἐγώ, τί πάθω; τί ὁ δύσσοος; οὐχ ὑπακούες;
τὰν βαίταν ἀποδὺς ἐς κύματα τῆνα ἀλεῦμαι,
ὥπερ τὼς θύννως σκοπιάζεται Ὄλπις ὁ γριπεύς.
καΐκα μὴ 'ποθάνω, τό γε μὰν τεὸν ἀδὺ τέτυκται.
ἔγνων πράν, ὅκα, μευ μεμναμένω εἰ φιλέεις με,
οὐδὲ τὸ τηλέφιλον ποτιμαξάμενον πλατάγησεν,
ἀλλ' αὔτως ἀμαλῶ ποτὶ πάχεος ἐξεμαράνθη.
εἶπε καὶ Ἀγροιὼ τἀλαθέα κοσκινόμαντις,
ἁ πρὰν ποιολογεῦσα παραιβάτις, οὕνεκ' ἐγὼ μὲν
τὶν ὅλος ἔγκειμαι· τὺ δέ μευ λόγον οὐδένα ποιῇ.

(*b*) ἐκ μὲν γὰρ λασίοιο δασύτριχος εἶχε τράγοιο
κνακὸν δέρμ' ὤμοισι, νέας ταμίσοιο ποτόσδον·
ἀμφὶ δέ οἱ στήθεσσι γέρων ἐσφίγγετο πέπλος
ζωστῆρι πλακερῷ· ῥοικὰν δ' ἔχεν ἀγριελαίω
δεξιτερᾷ κορύναν, καί μ' ἀτρέμας εἶπε σεσαρὼς
ὄμματι μειδιόωντι, γέλως δέ οἱ εἴχετο χείλευς·

(*c*) ὤμοι, ὅτ' οὐκ ἔτεκέν μ' ἁ μάτηρ βράγχι' ἔχοντα,
ὡς κατέδυν ποτὶ τίν, καὶ τὰν χέρα τεῦς ἐφίλασα,
αἰ μὴ τὸ στόμα λῆς· ἔφερον δέ τοι ἢ κρίνα λευκά,

ἢ μάκων' ἀπαλὰν ἐρυθρὰ πλαταγωνι' ἔχοισαν.
ἀλλὰ τὰ μὲν θέρεος, τὰ δε γίνεται ἐν χειμῶνι·
ὥστ' οὐκ ἄν τοι ταῦτα φέρειν ἅμα πάντ' ἐδυνάθην.

(d) τὠμπέχονον φέρε μοι, καὶ τὰν θολίαν κατὰ κόσμον
ἀμφίθες· οὐκ ἀξῶ τυ, τέκνον· μορμώ, δάκνει ἵππος.
δάκρυ' ὅσσ' ἐθέλεις· χωλὸν δ' οὐ δεῖ τυ γενέσθαι.
ἔρπωμες. Φρυγία, τὸν μικκὸν παῖσδε λαβοῖσα·
τὰν κύν' ἔσω κάλεσον· τὰν αὐλείαν ἀπόκλαξον.—

(e) γαμβρὸς δ' ἀθανάτων κεκλήσεται, οἳ τάδ' ἐπῶρσαν
κνώδαλα φωλεύοντα βρέφος διαδηλήσασθαι.
ἔσται δὴ τοῦτ' ἄμαρ, ὁπηνίκα νεβρὸν ἔν εὐνᾷ
καρχαρόδων σίνεσθαι ἰδὼν λύκος οὐκ ἐθελήσει.
ἄλλά, γύναι, πῦρ μέν τοι ὑπὸ σποδῷ εὔτυκον ἔστω,
κάγκανα δ' ἀσπαλάθῳ ξύλ' ἑτοιμάσατ', ἢ παλιούρῳ,
ἢ βάτῳ, ἢ ἰνέμῳ δεδονημένον αὖον ἄχερδον.

(f) ὦ βάκχε, χάλκεόν νιν ἀντ' ἀλαθινοῦ
τὶν ὧδ' ἀνέθηκαν,
τοὶ Συρακόσσαις ἐνίδρυνται πεδωρισταὶ πόλει,
οἳ' ἀνδρὶ πολίτᾳ,
(σωρὸν γὰρ εἶχε ῥημάτων) μεμναμένους
τελεῖν ἐπίχειρα.
πολλὰ γὰρ ποττὰν ζόαν τοῖς πᾶσιν εἶπε χρήσιμα·
μεγάλα χάρις αὐτῷ.

CLASSICAL HONOURS. (*Fourth Year*).

PLATO AND ARISTOTLE.

SATURDAY, APRIL 22ND :—AFTERNOON, 2 TO 5.

A.—PLATO, GORGIAS.

1. Translate, annotate and explain in reference to the context :—

(*a*) Ὅτι σοι αὐτίκ' ἂν παρασταῖεν οἱ δημιουργοὶ τούτων ὧν ἐπῄνεσεν ὁ τὸ σκολιὸν ποιήσας, ἰατρός τε καὶ παιδοτρίβης καὶ χρηματιστής, καὶ εἴποι πρῶτον μὲν ὁ ἰατρὸς ὅτι "ὦ Σώκρατες, ἐξαπατᾷ σε Γοργίας· οὐ γάρ ἐστιν ἡ τούτου τέχνη περὶ τὸ μέγιστον ἀγάθὸν τοῖς ἀνθρώποις, ἀλλ' ἡ ἐμή."

(*b*) ΣΩ. Ὁ οὐκ εἰδὼς ἄρα τοῦ εἰδότος ἐν οὐκ εἰδόσι πιθανώτερος ἔσται, ὅταν ὁ ῥήτωρ τοῦ ἰατροῦ πιθανώτερος ᾖ. τοῦτο συμβαίνει ἢ ἄλλο τι;

ΓΟΡ. Τοῦτο ἐνταῦθά γε συμβαίνει.

ΣΩ. Οὐκοῦν καὶ περὶ τὰς ἄλλας ἁπάσας τέχνας ὡσαύτως ἔχει ὁ ῥήτωρ καὶ ἡ ῥητορική; αὐτὰ μὲν τὰ πράγματα οὐδὲν δεῖ αὐτὴν εἰδέναι ὅπως ἔχει, μηχανὴν δέ τινα πειθοῦς ηὑρηκέναι, ὥστε φαίνεσθαι τοῖς οὐκ εἰδόσι μᾶλλον εἰδέναι τῶν εἰδότων;

ΓΟΡ. Οὐκοῦν πολλὴ ῥᾳστώνη, ὦ Σώκρατες, γίγνεται, μὴ μαθόντα τὰς ἄλλας τέχνας, ἀλλὰ μίαν ταύτην, μηδὲν ἐλαττοῦσθαι τῶν δημιουργῶν;

(*c*) Τῇ μὲν οὖν ἰατρικῇ, ὥσπερ λέγω, ἡ ὀψοποιικὴ κολακεία ὑπόκειται· τῇ δὲ γυμναστικῇ κατὰ τὸν αὐτὸν τρόπον τοῦτον ἡ κομμωτικὴ κακοῦργός τε οὖσα καὶ ἀπατηλὴ καὶ ἀγεννὴς καὶ ἀνελεύθερος, σχήμασιν καὶ χρώμασιν καὶ λειότητι καὶ ἐσθήσει ἀπατῶσα, ὥστε ποιεῖν ἀλλότριον κάλλος ἐφελκομένους τοῦ οἰκείου τοῦ διὰ τῆς γυμναστικῆς ἀμελεῖν.

(*d*) Ω Πῶλε, οὐκ εἰμὶ τῶν πολιτικῶν, καὶ περυσι βουλεύειν λαχών, ἐπειδὴ ἡ φυλὴ ἐπρυτάνευε καὶ ἔδει με ἐπιψηφίζειν, γέλωτα παρεῖχον καὶ οὐκ ἠπιστάμην ἐπιψηφίζειν. μὴ οὖν μηδὲ νῦν με κελευε ἐπιψηφίζειν τοὺς παρόντας

(*e*) εἰπέ μοι, ὦ Σώκρατες, πότερόν σε φῶμεν νυνὶ σπουδάζοντα ἢ παίζοντα;

(*f*) καὶ τοῦτο ἄρα τις μυθολογῶν κομψὸς ἀνήρ, ἴσως Σικελός τις ἢ Ἰταλικός, παράγων τῷ ὀνόματι διὰ τὸ πιθανόν τε καὶ πειστικὸν ὠνόμασε πίθον, τοὺς δὲ ἀνοήτους ἀμυήτους.

(*g*) Τῶν τὰ ὦτα κατεαγότων ἀκούεις ταῦτα, ὦ Σώκρατες.

(*h*) ἐγκωμιάζεις ἀνθρώπους, οἳ τούτους εἱστιάκασιν εὐωχοῦντες ὧν ἐπεθύμουν, καί φασι μεγάλην τὴν πόλιν πεποιηκέναι αὐτούς· ὅτι δὲ οἰδεῖ καὶ ὕπουλός ἐστιν δι' ἐκείνους τοὺς παλαιούς, οὐκ αἰσθάνονται.

(*i*) ἐπειδὰν οὖν ἀφίκωνται παρὰ τὸν δικαστήν, οἱ μὲν ἐκ τῆς Ἀσίας παρὰ τὸν Ῥαδάμανθυν, ὁ Ῥαδάμανθυς ἐκείνους ἐπιστήσας θεᾶται ἑκάστου τὴν ψυχήν, οὐκ εἰδὼς ὅτου ἐστίν, ἀλλὰ πολλάκις τοῦ μεγάλου βασιλέως ἐπιλαβόμενος ἢ ἄλλου ὁτουοῦν βασιλέως ἢ δυνάστου κατεῖδεν οὐδὲν ὑγιὲς ὂν τῆς ψυχῆς, ἀλλὰ διαμεμαστιγωμένην καὶ οὐλῶν μεστὴν ὑπὸ ἐπιορκιῶν καὶ ἀδικίας, ἃ ἑκάστη ἡ πρᾶξις αὐτοῦ ἐξωμόρξατο εἰς τὴν ψυχήν, καὶ πάντα σκολιὰ ὑπὸ ψεύδους καὶ ἀλαζονείας καὶ οὐδὲν εὐθὺ διὰ τὸ ἄνευ ἀληθείας τεθράφθαι· καὶ ὑπὸ ἐξουσίας καὶ τρυφῆς καὶ ὕβρεως καὶ ἀκρατίας τῶν πράξεων ἀσυμμετρίας τε καὶ αἰσχρότητος γέμουσαν τὴν ψυχὴν εἶδεν· ἰδὼν δὲ ἀτίμως ταύτην ἀπέπεμψεν εὐθὺ τῆς φρουρᾶς, αἳ μέλλει ἐλθοῦσα ἀνατλῆναι τὰ προσήκοντα πάθη.

2. Illustrate from this dialogue Plato's attitude towards the Athenian democracy and the leading Athenian statesman of the past.

B.—ARISTOTLE, ETHICS.

1. Translate and explain :—

(*a*) τὰ δὲ καλὰ καὶ τα δίκαια, περὶ ὧν ἡ πολιτικὴ σκο-

πεῖται, πολλὴν ἔχει διαφορὰν καὶ πλάνην, ὥστε δοκεῖν νόμῳ μόνον εἶναι, φύσει δὲ μή. τοιαύτην δέ τινα πλάνην ἔχει καὶ τἀγαθὰ διὰ τὸ πολλοῖς συμβαίνειν βλάβας ἀπ' αὐτῶν· ἤδη γάρ τινες ἀπώλοντο διὰ πλοῦτον, ἕτεροι δὲ δι' ἀνδρείαν. ἀγαπητὸν οὖν περὶ τοιούτων καὶ ἐκ τοιούτων λέγοντας παχυλῶς καὶ τύπῳ τἀληθὲς ἐνδείκνυσθαι, καὶ περὶ τῶν ὡς ἐπὶ τὸ πολὺ καὶ ἐκ τοιουτων λέγοντας τοιαῦτα καὶ συμπεραίνεσθαι.

(b) ἀπορήσειε δ' ἄν τις τί ποτε καὶ βούλονται λέγειν αὐτοέκαστον, εἴπερ ἕν τε αὐτοανθρώπῳ καὶ ἐν ἀνθρώπῳ εἷς καὶ ὁ αὐτὸς λόγος ἐστὶν ὁ τοῦ ἀνθρώπου. ἦ γὰρ ἄνθρωπος, οὐδὲν διοίσουσιν· εἰ δ' οὕτως, οὐδ' ἦ ἀγαθόν. ἀλλὰ μὴν οὐδὲ τῷ ἀίδιον εἶναι μᾶλλον ἀγαθὸν ἔσται, εἴπερ μηδὲ λευκότερον τὸ πολυχρόνιον τοῦ ἐφημέρου. πιθανώτερον δ' ἐοίκασιν οἱ Πυθαγόρειοι λέγειν περὶ αὐτοῦ, τιθέντες ἐν τῇ τῶν ἀγαθῶν συστοιχίᾳ τὸ ἕν· οἷς δὴ καὶ Σπεύσιππος ἐπακολουθῆσαι δοκεῖ.

(c) τί οὖν κωλύει λέγειν εὐδαίμονα τὸν κατ' ἀρετὴν τελείαν ἐνεργοῦντα καὶ τοῖς ἐκτὸς ἀγαθοῖς ἱκανῶς κεχορηγημένον μὴ τὸν τυχόντα χρόνον ἀλλὰ τελειον βίον; ἢ προσθετέον καὶ βιωσόμενον οὕτω καὶ τελευτήσοντα κατὰ λόγον; ἐπειδὴ τὸ μέλλον ἀφανὲς ἡμῖν ἐστὶν, τὴν εὐδαιμονίαν δὲ τέλος καὶ τέλειον τίθεμεν πάντῃ πάντως. εἰ δ' οὕτω, μακαρίους ἐροῦμεν τῶν ζώντων οἷς ὑπάρξει τὰ λεχθέντα, μακαρίους δ' ἀνθρώπους.

(d) διὸ καὶ ὁρίζονται τὰς ἀρετὰς ἀπαθείας τινὰς καὶ ἠρεμίας· οὐκ εὖ δέ, ὅτι ἁπλῶς λέγουσιν, ἀλλ' οὐχ ὡς δεῖ καὶ ὡς οὐ δεῖ καὶ ὅτε, καὶ ὅσα ἄλλα προστίθεται.

(e) ἐπεὶ οὖν τοῦ μέσου τυχεῖν ἄκρως χαλεπόν, κατὰ τὸν δεύτερον, φασὶ, πλοῦν τὰ ἐλάχιστα ληπτέον τῶν κακῶν· τοῦτο δ' ἔσται μάλιστα τοῦτον τὸν τρόπον ὃν λέγομεν.

(*f*) μή ποτε δὲ οὐ καλῶς τοῦτο λέγεται. οἱ γὰρ περὶ τῶν ἐν τοῖς πάθεσι καὶ ταῖς πράξεσι λόγοι ἧττόν εἰσι πιστοὶ τῶν ἔργων· ὅταν οὖν διαφωνῶσι τοῖς κατὰ τὴν αἴσθησιν, καταφρονούμενοι καὶ τἀληθὲς προσαναιροῦσιν· ὁ γὰρ ψέγων τὴν ἡδονήν, ὀφθείς ποτ' ἐφιέμενος, ἀποκλίνειν δοκεῖ πρὸς αὐτὴν ὡς τοιαύτην οὖσαν ἅπασαν· τὸ διορίζειν γὰρ οὐκ ἔστι τῶν πολλῶν.

(*g*) ἡ τελεία δὴ εὐδαιμονία αὕτη ἂν εἴη ἀνθρώπου, λαβοῦσα μῆκος βίου τέλειον· οὐδὲν γὰρ ἀτελές ἐστι τῶν τῆς εὐδαιμονίας. ὁ δὲ τοιοῦτος ἂν εἴη βίος κρείττων ἢ κατ' ἄνθρωπον· οὐ γὰρ ᾗ ἄνθρωπός ἐστιν οὕτω βιώσεται, ἀλλ' ᾗ θεῖόν τι ἐν αὐτῷ ὑπάρχει. ὅσον δὲ διαφέρει τοῦτο τοῦ συνθέτου, τοσοῦτον καὶ ἡ ἐνέργεια τῆς κατὰ τὴν ἄλλην ἀρετήν.

C.—ARISTOTLE, POETICS.

1. Translate, explain and critize :—

(*a*) ἡ δὲ κωμῳδία ἐστὶν ὥσπερ εἴπομεν μίμησις φαυλοτέρων μέν, οὐ μέντοι κατὰ πᾶσαν κακίαν, ἀλλὰ τοῦ αἰσχροῦ ἐστι τὸ γελοῖον μόριον· τὸ γὰρ γελοῖόν ἐστιν ἁμάρτημά τι καὶ αἶσχος ἀνώδυνον καὶ οὐ φθαρτικόν, οἷον εὐθὺς τὸ γελοῖον πρόσωπον αἰσχρόν τι καὶ διεστραμμένον ἄνευ ὀδύνης.

(*b*) ἔτι ἐάν τις ἐφεξῆς θῇ ῥήσεις ἠθικὰς καὶ λέξει καὶ διανοίᾳ εὖ πεποιημένας, οὐ ποιήσει ὃ ἦν τῆς τραγῳδίας ἔργον, ἀλλὰ πολὺ μᾶλλον ἡ καταδεεστέροις τούτοις κεχρημένη τραγῳδία, ἔχουσα δὲ μῦθον καὶ σύστασιν πραγμάτων,

(*c*) ἔστιν μὲν οὖν τὸ φοβερὸν καὶ ἐλεεινὸν ἐκ τῆς ὄψεως γίγνεσθαι, ἔστιν δὲ καὶ ἐξ αὐτῆς τῆς συστάσεως τῶν πραγμάτων, ὅπερ ἐστὶ πρότερον καὶ ποιητοῦ ἀμείνονος.

(*d*) ἔστιν δέ τις καὶ συνθετὴ ἐκ παραλογισμοῦ τοῦ θατέρου, οἷον ἐν τῷ Ὀδυσσεῖ τῇ ψευδαγγέλῳ· ὁ μὲν γὰρ τὸ τόξον ἔφη γνώσεσθαι ὃ οὐχ ἑωράκει, τὸ δέ, ὡς δὴ ἐκείνου ἀναγνωριοῦντος διὰ τοῦτο, ἐποίησε παραλογισμόν.

(*e*) τὸ μὲν οὖν φαίνεσθαι πως χρώμενον τούτῳ τῷ τρόπῳ γελοῖον, τὸ δὲ μέτρον κοινὸν ἁπάντων ἐστὶ τῶν μερῶν· καὶ γὰρ μεταφοραῖς καὶ γλώτταις καὶ τοῖς ἄλλοις εἴδεσι χρώμενος, ἀπρεπῶς καὶ ἐπίτηδες ἐπὶ τὰ γελοῖα τὸ αὐτὸ ἂν ἀπεργάσαιτο.

(*f*) πρῶτον μέν <οὖν> οὐ τῆς ποιητικῆς ἡ κατηγορία ἀλλὰ τῆς ὑποκριτικῆς, ἐπεὶ ἔστι περιεργάζεσθαι τοῖς σημείοις καὶ ῥαψῳδοῦντα.

LATIN.

SESSIONAL EXAMINATIONS.

FIRST YEAR.

VIRGIL, *Georgics IV.* ; CICERO, *De Senectute* ; OVID, *Metamorphoses XIII*,

THURSDAY, APRIL 6TH :—MORNING, 9 TO 12.

I. VIRGIL.

1. Translate :—

Verum ubi nulla fugam reperit pellacia, victus
In sese redit, atque hominis tandem ore locutus :
"Nam quis te, iuvenum confidentissime, nostras
Iussit adire domus ? quidve hinc petis ? " inquit. At ille :
"Scis, Proteu, scis ipse ; neque est te fallere quidquam ;
Sed tu desine velle. Deum praecepta secuti,
Venimus hinc lapsis quaesitum oracula rebus."
Tantum effatus. Ad haec vates vi denique multa
Ardentes oculos intorsit lumine glauco,
Et graviter frendens, sic fatis ora resolvit :
"Non te nullius, exercent numinis irae.
Magna luis commissa ; tibi has miserabilis Orpheus
Haudquaquam ob meritum poenas, ni Fata resistant,
Suscitat, et rapta graviter pro coniuge saevit.

Remark on (*a*) neque est te fallere quidquam ; (*b*) non te nullius ; (*c*) haudquaquam ob meritum (giving another reading and interpretation).

2. Translate, and write brief notes on words printed in *italics*.

(*a*) melior vacua *sine regnet* in aula.

(*b*) aut quo tibi *nostri* pulsus amor ?

(*c*) at tenuis non gloria, si quem
numina *laeva* sinunt auditque vocatus Apollo

(*e*) *inmunisque* sedens aliena ad pabula fucus

(*f*) et gemina auratus taurino cornua vultu *Eridanus*.

(*g*) spiculaque exacuunt rostris.

(*h*) *deum* namque ire per omnes
terrasque tractusque maris caelumque profundum.

3. Scan the following lines, noting any peculiarities :

ille comam mollis iam tondebat hyacinthi.
atque Getae atque Hebrus et Actias Orithyia.
non te nullius exercent numinis irae.

II. CICERO.

4. Translate :

(*a*) Videtisne, ut apud Homerum saepissime Nestor de virtutibus suis praedicet ? Tertiam enim iam aetatem hominum vivebat ; nec erat ei verendum, ne vera praedicans de se nimis videretur aut insolens aut loquax. Etenim, ut ait Homerus, *ex eius linua melle dulciorfluebat oratio*. Quam ad suavitatem nullis egebat corpor*g* viribus.

(*b*) Quid igitur timeam, si aut non miser post mortem, aut beatus etiam futurus sum ? Quamquam quis est tam stultus, quamvis sit adolescens, cui sit exploratum, se ad vesperum esse victurum ?

(*c*) Audiebam Pythagoram Pythagoreosque, incolas paene nostros, qui essent Italici philosophi quondam nominati, numquam dubitasse, quin ex universa mente divina delibatos animos haberemus. Demonstrabantur mihi praeterea, quae Socrates supremo vitae die de immortalitate animorum disseruisset, is, qui esset omnium sapientissimus orac ulo A polliuis, iudicatus

5. (*a*) Account for the grammatical construction of *praedicet*, *ei*, *videretur*, *melle*, *viribus* ; *timeam*, (quamvis) *sit* ; *disseruisset*, *esset*, *omnium*. (*b*) Comment on *Pythagoram Pythagoreosque*, *delibatos*.

6. Write brief notes on the following names :—*Pelias*, *Marcellus*, *Marcus Atilius*, *Pisistratus*, *Tartessii*, *Duellius*, *Zeno*.

7. Translate (with comments) :

Apud Xenophontem autem moriens Cyrus maior haec dicit : Nolite arbitrari, O mihi carissimi filii, me, cum a vobis discessero, nusquam aut nullum fore. Nec enim, dum eram vobiscum, animum meum videbatis, sed eum esse in hoc corpore ex eis rebus quas gerebam intellegebatis.

III. Ovid Metamorphoses XIII 1-622.

1. Translate :

(*a*) Litore Threicio classem religarat Atrides,
dum mare pacatum, dum uentus amicior esset :
hic subito, quantus cum uiueret esse solebat,
exit humo late rupta similisque minanti
temporis illius uultum referebat Achilles,
quo ferus iniusto petiit Agamemnona ferro :
'immemoresque' mei disceditis, 'inquit,' Achiui ?
obrutaque est mecum uirtutis gratia nostrae ?
ne facite ! utque meum non sit sine honore sepulcrum,
placet Achilleos mactata Polyxena manes ! '

Quote any expressions in this book parallel to Achilleos manes.

(*b*) Nec clipeus uasti caelatus imagine mundi
conueniet timidae nataeque ad furta sinistrae :
debilitaturum quid te petis, improbe, munus ?
quod tibi si populi donauerit error Achiui,
cur spolieris, erit, non cur metuaris ab hoste,
et fuga, qua sola cunctos, timidissime, uincis,
tarda futura tibi est gestamina tanta trahenti.

Scan the first two lines of (*b*).

2. On what grounds does Ulysses argue against Ajax' relationship to Achilles being taken into account ? Quote any lines you can of the original.

3. Illustrate Grimm's law by any two words, one being taken from each of the above passages.

SESSIONAL EXAMINATIONS.

FIRST YEAR.

ROMAN HISTORY.—THE PUNIC WARS.

THURSDAY, APRIL 6TH :—2 TO 3 P.M.

Write upon any four of the following subjects

1. The City of Carthage and the Carthaginian Empire.

2. The first Roman fleet and naval battle.

3. A brief sketch of Hannibal's march from New Carthage to Cannae, with dates.

4. Battle of Metaurus.

5. Events corresponding to the following dates :—B. C. 251, 241, 216, 202, 146. Geographical position of Syracuse, Panormus, Rhegium, Aegates Insulae, Ecnomus, Capua, Placentia.

LATIN COMPOSITION AND UNSEEN.

FIRST YEAR.

THURSDAY, APRIL 6TH :—3 TO 5.30 P.M.

Translate :—

(1) He said that the consul whom you had seen would soon set out to the town where you were born.

(2) I lived four years at Ephesus and two at Philippi.

(3) Do not ask me for money.

(4) I was persuaded by the enemy to lead them to Athens.

(5) Why do we neglect the counsels of Tullius, our noble consul?

(6) He asked me why I had come and when I was going to set out.

(7) He said that you might come, but that you ought to have asked him to go with you.

(8) Did Gaius send for you or Balbus?

(9) This is more prudent than courageous.

(10) He repented of his folly.

(11) The Germans were of great service to Cæsar.

(12) It is of great importance to me that I should be forgiven.

(13) Our parents must be obeyed.

For Unseen Translation.

Ab Lentulo, Cethego, Statilio, item Cassio postulant jusjurandum. Ceteri nihil suspicantes dant, Cassius semet breui uenturum pollicetur, ac paulo ante legatos ex urbe proficiscitur. Lentulus cum his T. Uolturcium quendam Crotoniensem mittit, ut Allobroges prius quam Tomum pergerent cum Catilina data atque accepta fide societatem confirmarent. Ipse Uolturcio litteras ad Catilinam dat, quarum exemplum infra scriptum est. 'Quis sim ex eo quem ad te misi cognosces. Fac cogites in quanta calamitate sis, et memineris te uirum esse; consideres quid tuae rationes postulent; auxilium petas ab omnibus, etiam ab infimis.' Ad hoc mandata uerbis dat; cum ab Senatu hostis iudicatus sit quo consilio seruitia repudiet? in urbe parata esse quae iusserit; ne cunctetur ipse propius accedere.

INTERMEDIATE EXAMINATION.

LATIN.

THURSDAY, APRIL 6TH:—MORNING, 9 TO 12.

I. CICERO'S FOURTH VERRINE.

1. Translate:—

Non possum disposite istum accusare, si cupiam: opus est non solum ingenio, uerum etiam artificio quodam singulari. Unum hoc crimen uidetur esse et a me pro uno ponitur: plura sunt, sed ea quo pacto distinguere ac separare possim, nescio. Est pecuniarum captarum, quod signum ab sociis pecuniae magnae sustulit: est peculatus, quod publicum populi Romani signum, de praeda hostium captum, positum imperatoris nostri nomine,

non dubitauit auferre : est maiestatis, quod imperii nostri, gloriae, rerum gestarum monumenta euertere atque asportare ausus est ; est crudelitatis, quod in hominem innocentem, in socium uestrum atque amicum nouum et singulare supplicii genus excogitauit. illud uero quid sit iam non queo dicere, quo nomine appellem nescio, quod in C. Marcelli statua.

2. Explain briefly the following :—

(*a*) gramineas hastas.

(*b*) illud T. Flamininus ita ex aede sua sustulit, ut in Capitolio, hoc est, in terrestri domicilio Iouis poneret.

(*c*) mystagogos.

(*d*) quid ut pictam Coos? Supply the words understood.

(*e*) tametsi Peducaeus eorum laudatione iam non uteretur.

(*f*) vasa collegerat.

(*g*) ostiatim.

(*h*) nimirum ut hic nomen suum comprobauit, sic ille cognomen. Who is referred to here?

II. Horace, Selected Odes.

1. Translate :

(*a*)

Expertus vacuum Daedalus aera
pennis non homini datis :
perrupit Acheronta Herculeus labor.
Nil mortalibus arduum est.
Caelum ipsum petimus stultitia, neque
per nostrum patimur scelus
iracunda Iovem ponere fulmina.

Write notes on *Daedalus, non datis* and *perrupit . . . . . labor.* Scan the third line, remarking on any peculiarity.

(*b*)

Iustum ac tenacem propositi virum
non civium ardor prava iubentium,
non vultus instantis tyranni
mente quatit solida, neque Auster,
dux inquieti turbidus Hadriae,
nec fulminantis magna manus Iovis.
Si fractus illabatur orbis,
impavidum ferient ruinae.
Hac arte Pollux et vagus Hercules
enisus, arces attigit igneas :
quos inter Augustus recumbens
purpureo bibet ore nectar.

Hac arte : What quality is the poet describing here? Give the grammatical construction of *propositi, mente, arcis.* Explain the epithets *igneas* and *purpureo.*

(*c*) Diffugere nives; redeunt iam gramina campis
arboribusque comae:
mutat terra vices; et decrescentia ripas
flumina praetereunt:
Gratia cum Nymphis geminisque sororibus audet
ducere nuda choros.
Immortalia ne speres, monet annus et almum
quae rapit hora diem.

2. Describe the metre of each of these extracts.

3. Write a brief note on each of the following:

(*a*) Maecenas atavis edite regibus.

(*b*) saeculum Pyrrhae.

(*c*) fratres Helenae.

(*d*) audax perpeti.

(*e*) Cyclopum officinas.

(*f*) Tempe.

(*g*) tempora populea fertur vinxisse corona.

(*h*) Catonis nobile letum.

(*i*) integer vitae.

(*k*) favete linguis.

III. QUINTILIAN X., §§ 37-131.

1. Translate:—

Sed longe clarius illustraverunt hoc opus Sophocles atque Euripidesi quorum in dispari dicendi via uter sit poeta melior, inter plurimos quaeritur. Idque ego sane, quoniam ad praesentem materiam nihil pertinet, insudicatum relinquo. Illud quidem nemo non fateatur necesse est, iis, qu se ad agendum comparant, utiliorem longe fore Euripiden. Namque is et sermone (quod ipsum reprehendunt, quibus gravitas et cothurnus et sonus Sophoclis videtur essa sublimior) magis accedit oratorio generi et sententiis densus et in iis, quae a sapientibus tradita sunt, paene ipsis par, et dicendo ac respondendo cuilibet eorum, qui fuerunt in foro diserti, comparandus; in affectibus vero cum omnibus mirus tum in iis, qui miseratione constant, facile praecipuus est.

(*b*) Quorum ego virtutes plerasque arbitror similes, consilium, ordinem, dividendi, praeparandi, probandi rationem, omnia denique quae sunt inventionis. In eloquendo est aliqua diversitas; densior ille hic copiosior, ille concludit astrictius hic latius, pugnat ille acumine semper hic frequenter et pondere, illi nihil detrahi potest huic nihil adiici, curae p us in illo in hoc naturae.

II. Translate, with any necessary explanations :—

(1) Sed non quidquid ad aliquam partem scientiae pertinet, protinus ad faciendam φράσιν, de qua loquimur, accommodatum.

(2) Aratus ab Iove incipiendum putat.

(3) Admirabilis in suo genere Theocritus.

(4) Raro adsurgit Hesiodus.

(5) Ennium sicut sacros vetustate lucos adoremus.

(6) In comoedia maxime claudicamus.

(7) Ille se profecisse sciat cui Cicero valde placebit.

(8) Lucanus ardens et concitatus et sententiis clarissimus.

III. Write down the meaning of *pedestris oratio, ordo a grammaticis datus, regnare in iudiciis, aureo plectro donandus, secundas deferre, omnem vitae imaginem expressit (Menander), calcaribus egere, summa in excolendis operibus manus, palaestrae quam pugnae magis accommodatus.*

SESSIONAL EXAMINATIONS.

SECOND YEAR.

ROMAN HISTORY AND LITERATURE.

THURSDAY, APRIL 6TH :—2 TO 3 P.M.

(Not more than six question to be answered—three from each division of the paper.)

A.

1. Sketch the condition of affairs in Rome and the civil troubles at the beginning of this period.

2. What were the objects for which the Sempronian laws were enacted? Give the chief provisions of these laws.

3. Give a leading event of each of the following years :—B. C. 102, 88, 83, 67, 63, 53, 48, 31.

4. Give an account of the Mithridatic war during the period in which Lucullus was in command of the Roman Army.

5. Give the chief events in Cicero's life after his recall from exile (B. C. 57) till his death.

B.

1. Show by reference to the various forms of literary composition how the want of originality commonly charged against Latin Literature was the outcome of the Roman national character.

2. Write a brief note on each of the following :—Propertius, Seneca, Quintilian, Naevius, Catullus, Pacuvius, Lucretius, Varro.

3. Sketch the general characteristics of the literature of the Augustan age.

4. Give a short account of the origin and growth of Satire.

SECOND YEAR.

LATIN PROSE COMPOSITION AND TRANSLATION AT SIGHT.

THURSDAY, APRIL 6TH :—3 TO 5.30 P.M.

I.

Translate into Latin :

1. If they come to see you, tell them to wait until I arrive.

2. You ought to have done this whether you wished to or not.

3. He persuaded them not to retreat, and warned them that the whole country was in the hands of the enemy.

4. The Macedonians spared no man that came in their way ; for the king had given orders to kill allthe inhabitants (those excepted who had sheltered themselves in the temples) and to fire Tyre on every side.

5. The general then summoneda council of war and spoke thus : (*Or. Obl.*) "We must now decide whether it is to our advantage to hold our position or to retreat while we still have the opportunity. The reinforcements which we have so long expected have not arrived, and for my part I believe we are no match for the enemy. But I know we can trust the courage and endurance of our men, and, if it is your wish, I am prepared to hold out as long as possible. Tell me plainly your opinion, for I shall do nothing without your approval."

II.

Translate into English :

Sed praeterita omittamus : hunc unum diem, unum, inquam, hodiernum diem, hoc punctum temporis, quo loquor, defende, si potes. Cur armatorum corona senatus saeptus es ? cur me tui satellites cum gladiis audiunt ? cur valvae concordiae non patent ? cur homines omnium gentium maxime barbaros, cum sagittis (educis in forum ? Praesidii sui causa se facere dicit. Non igitur miliens perire est melius quam in sua civitate sine armatorum praesidio non posse vivere ? Sed nullum est istud, mihi crede,

praesidium: caritate te et benevolentia civium saeptum oportet esse, non armis. Eripiet et extorquebit tibi ista populus Romanus, utinam salvis nobis! sed quoquo modo nobiscum egeris, dum istis consiliis uteris, non potes, mihi crede, esse diuturnus.

SESSIONAL EXAMINATIONS, 1899.

THIRD YEAR.

LATIN.

TERENCE, *Phormio*. PLINY, *Letters, Books I. II.* MARTIAL, *Select Epigrams*.

THURSDAY, APRIL 6TH:—MORNING, 9 TO 12.

I. TERENCE.

1. Translate with comments:—

(*a*) Date operam, adeste aequo animo per silentium,
ne simili utamur fortuna, atque usi sumus
quom per tumultum noster grex motus loco est:
quem actoris virtus nobis restituit locum,
bonitasque vostra adiutans atque aequanimitas.

(*b*) Loquarne? incendam: taceam? instigem: purgem me? laterem lavem.
Eheu me miserum: quom mihi paveo, tum Antipho me excruciat animi:
eius me miseret: ei nunc timeo: is nunc me retinet: nam absque eo esset,
recte ego mihi vidissem: et senis essem ultus iracundiam:
aliquid conrasissem, atque hinc me conicerem protinam in pedes.

(*c*) PH. Nam iam adulescenti nihil est quod suscenseam,
si illum minus norat; quippe homo iam grandior,
pauper, cui opera vita erat, ruri fere
secontinebat: ibi agrum de nostro patre
colendum habebat: saepe interea mihi senex
narrabat, se hunc negligere cognatum suum:
at quem virum? quem ego viderim in vita optumum.
GE. Videas te atque illum, ut narras.

(*d*) CH. Di vostram fidem, quam saepe forte temere
eveniunt quae non audeas optare? Offendi adveniens,
quocum volebam atque ut volebam, collocatam filiam.
Quod nos ambo opere maxumo dabamus operam ut fieret,
sine nostra cura maxima, sua cura haec sola fecit.

2. Determine the metre of each of these passages.

3. Write brief notes on:

(*a*) prologus; ars musica; grex; rellatum; ilicet; faxo; cantor; edepol; asymbolum; repudium.

(*b*) advorsum stimulum calces.

(*c*) scisti uti foro.

(*d*) scribam dicam.

(*e*) quid te futurum est?

(*f*) ubi in mentem eius adventi venit.

(*g*) Di tibi omnes id quod es dignus duint,

(*h*) 'actum,' aiunt, 'ne agas.'

(*i*) Homo confidens! qui illum di omnes perduint.

II. Pliny.

4. Translate, with notes on italicized words:—

(*a*) Mirum est quam singulis diebus in urbe ratio aut constet aut constare videatur, pluribus *cunctaque* non constet. nam si quem interroges 'hodie quid egisti?' respondeat '*officio togae virilis* interfui, sponsalia aut nuptias frequentavi, ille me ad *signandum* testimentum, ille in advocationem, ille *in consilium roguvit*.'

(*b*) Iacturam gravissimam feci, si *iactura* dicenda est tanti viri amissio: decessit Corellius Rufus, et quidem sponte, quod dolorem meum exulcerat. est enim luctuosissimum genus mortis quae non *ex natura nec fatalis* videtur.

(*c*) Post aliquot annos insigne atque etiam memorabile populi Romani oculos spectaculum exhibuit publicum funus *Vergini Rufi*, maximi et clarissimi civis, perinde felicis. perfunctus est tertio consulatu, ut *summum fastigium privati hominis* inpleret, cum principis noluisset. *Caesares* quibus suspectus atque etiam invisus *virtutibus* fuerat evasit, reliquit incolumem *optimum* atque amicissimum, tamquam ad hunc ipsum honorem publici funeris reservatus.

(*d*) sequuntur auditores actoribus similes conducti et redempti: *manceps* convenitur: in media *basilica* tam palam *sportulae* quam in triclinio dantur: ex iudicio pari mercede transitur. inde iam non inurbane σοφοκλεῖς vocantur: isdem Latinum nomen inpositum est *laudiceni*.

5. Write explanatory notes on the following words or phrases:

euripus: cubiculum: μουσεῖον:
otiosum: quadruplex iudicium:
clepsydra: amici mei viderint:
climactericum tempus.

III. MARTIAL.

6. Translate :—

(*a*) O mihi post nullos, Iuli, memorande sodales,
Si quid longa fides canaque iura valent,
Bis iam paene tibi consul tricesimus instat,
Et numerat paucos vix tua vita dies.
Non bene distuleris videas quae posse negari,
Et solum hoc ducas, quod fuit, esse tuum.

(*b*) Par scelus admisit Phariis Antonius armis :
Abscidit vultus ensis uterque sacros.
Illud, laurigeros ageres cum laeta triumphos,
Hoc tibi, Roma, caput, cum loquereris, erat.
Antoni tamen est peior, quam causa Pothini :
Hic facinus domino praestitit, ille sibi.

(*c*) Cappadocum saevis Antistius occidit oris
Rusticus. O tristi crimine terra nocens !
Rettulit ossa sinu cari Nigrina mariti
Et questa est longas non satis esse vias ;
Cumque, daret sanctam tumulis, quibus invidet, urnam,
Visa sibi est rapto bis viduata viro.

SESSIONAL EXAMINATIONS.

THIRD YEAR.

ROMAN HISTORY AND LITERATURE.

THURSDAY, APRIL 6TH :—2 TO 3 P.M.

(*Not more than three questions in each part are to be attempted.*)

A

1. Describe the early settlement of Rome.

2. Distinguish the different orders of the state : patricians, clients, plebeians and slaves.

3. What are the main sources for determining the early history of Rome ?

4. Name, and briefly describe (with dates), the laws passed to alleviate the condition of the poor.

5. Give an account of the capture of Rome by the Gauls.

B.

1. Say a few words about the following Latin authors: Aulus Gellius, Claudian, Catullus, Tibullus, Cornelius Nepos, Velleius Paterculus.

2. Enumerate the works of Ovid and Terence.

3. Give a short account of the classical authors of the Silver age.

4. Enumerate the rhetorical and philosophic writings of Cicero.

5. Account for the decline of Latin Literature in the 3rd century and mention any writers of the period.

SESSIONAL EXAMINATIONS.

THIRD YEAR.

LATIN PROSE COMPOSITION AND TRANSLATION AT SIGHT.

THURSDAY, APRIL 6TH :—AFTERNOON, 3 TO 5.30.

1. Translate into Latin :—

Ten years after, Caius, the younger brother of Tiberius, thinking he ought to avenge his brother's death, brought forward laws to upset the whole constitution. The people had not forgotten the death of Tiberius, and all the power of the senators could not prevent their electing Caius tribune of the plebs. But Tiberius had proposed his laws because he pitied the common people; Caius proposed his in order that he might the more easily satisfy his desire for revenge. He was also accused of aiming at kingship. For two years he delivered many speeches before the people, and continued to propose such laws as might lessen the senate's power.

2. Translate into English :—

Et quoniam non est nobis haec oratio habenda aut cum imperita multitudine aut in aliquo conventu agrestium : audacius paullo de studiis humanitatis, quae et mihi et vobis nota et iucunda sunt, disputabo. In M. Catone, iudices, haec bona, quae videmus, divina et egregia, ipsius scitote esse propria: quae non numquam requirimus, ea sunt omnia non a natura, sed a magistro. Fuit enim quidam summo ingenio vir, Zeno, cuius inventorum aemuli Stoici nominantur. Huius sententia sunt et praecepta eiusmodi: sapientem gratia numquam moveri, numquam cuiusquam delicto ignoscere: neminem misericordem esse, nisi stultum et levem: viri non esse neque exorari neque placari: solos sapientes esse, si distortissimi sint, formosos; si mendicissimi, divites; si servitutem serviant, reges: nos autem, qui sapientes non sumus, fugitivos, exules, hostes, insanos denique esse dicunt: omnia peccata esse paria: omne delictum scelus esse nefarium, nec minus delinquere eum, qui gallum gallinaceum, cum opus non fuerit, quam eum, qui patrem suffocaverit: sapientem nihil opinari, nullius rei paenitere, nulla in re falli, sententiam mutare numquam.

FOURTH YEAR.

LATIN.

JUVENAL, *Satires*; LIVY, *Book V.*; TIBULLUS, *Selections.*

THURSDAY, APRIL 6TH:—MORNING, 9 TO 12.

I. JUVENAL.

1. Translate with brief notes:—

(*a*) pauci dignoscere possunt
Vera bona atque illis multum diversa.

(*b*) Ergo supervacua haec aut perniciosa petuntur
Propter quae fas est genua incerare deorum.
(Give the MS. reading and various emendations.)

(*c*) Unus Pellaeo iuveni non sufficit orbis.

(*d*) Sed facilis cuivis rigidi censura cachinni.

(*e*) Eloquium ac famam Demosthenis aut Ciceronis
incipit optare et totis quinquatribus optat,
quisque adhuc uno parcam colit asse Minervam
quem sequitur custos angustae vernula capsae.

(*f*) Nec tamen Antiochus, nec erit mirabilis illic
aut Stratocles aut cum molli Demetrius Haemo:
natio comoeda est. rides, maiore cachinno
concutitur; flet, si lacrimas conspexit amici,
nec dolet; igniculum brumae si tempore poscas,
accipit endromidem; si dixeris "aestuo," sudat.

2. Translate with explanatory notes on words printed in *italics*:

(*a*) Prodita *laxabant* portarum claustra *tyrannis*
iuvenes ipsius consulis et quos
magnum aliquid dubia pro *libertate deceret*,
quod *miraretur* cum Coclite Mucius et quae
imperii fines *Tiberinum virgo* natavit.

(*b*) Dicas hic forsitan: 'unde
ingenium par materiae? unde illa priorum
scribendi quodcumque animo flagrante liberet
simplicitas "cuius non audes dicere nomen?
quid refert dictis ignoscat *Mucius* an non?"
pone *Tigillinum*, taeda lucebis in illa,
qua stantes ardent, qui fixo pectore fumant,
et latum media sulcum deducit harena.'

Give different readings and interpretations of the last line: *et latum . . . . . harena*.

II. Livy.

3. Translate :—

(*a*) quid illos aliud aut tum timuisse creditis aut hodie turbare velle nisi concordiam ordinum, quam dissolvendae maxime tribuniciae potestatis rentur esse? sic hercule tamquam artifices improbi opus quaerunt; quippe semper aegri aliquid esse in re publica volunt, ut sit, ad cuius curationem a vobis adhibeantur. utrum enim defenditis an inpugnatis plebem? utrum militantium adversarii estis an causam agitis? nisi forte hoc dicitis: 'quidquid patres faciunt displicet, sive illud pro plebe sive contra plebem est.'

(*b*) Iam ludi Latinaeque instauratae erant, iam ex lacu Albano aqua emissa in agros, Veiisque fata adpetebant. igitur fatalis dux ad excidium illius urbis servandaeque patriae, M. Furius Camillus, dictator dictus magistrum equitum P. Cornelium Scipionem dixit. omnia repente mutaverat imperator mutatus; alia spes, alius animus hominum, fortuna quoque alia urbis videri. omnium primum in eos, qui a Veiis in illo pavore fugerant, more militari animadvertit, effecitque ne hostis maxime timendus militi esset.

(*c*) Simul ab religione animos remiserunt, integrant seditionem tribuni plebis; incitatur multitudo in omnes principes, ante alios in Camillum: eum praedam Veientanam publicando sacrandoque ad nihilum redegisse. absentes ferociter increpant; praesentium, cum se ultro iratis offerrent, verecundiam habent. simul extrahi rem ex eo anno viderunt, tribunos plebis latores legis in annum eosdem reficiunt; et patres hoc idem de intercessoribus legis adnisi.

4. Write explanatory notes on :—

(1) *dissolvendae . . . potestatis esse* (Ext. *a*) (2) *ludi Latinaeque, fatalis ad excidium . . . . servandae patriae, more militari* (Ext. *b*).

III. C. Tibullus Selections.

1. Translate :—

(*a*) Elysios olim liceat cognoscere campos
Lethaeamque ratem Cimmeriosque lacus,
cum mea rugosa pallebunt ora senecta
et referam pueris tempora prisca senex.
atque utinam uano nequicquam terrear aestu,
languent ter quinos sed mea membra dies.
at vobis Tuscae celebrantur numina lymphae
et facilis lenta pellitur unda manu.

vivite felices, memores et vivite nostri,
siue erimus seu nos fata fuisse uelint.
interea nigras pecudes promittite Diti
et niuei lactis pocula mixta mero.

(*b*) Tum fiscella leui detexta est uimine iunci,
raraque per nexus est uia facta sero.
o quotiens illo uitulum gestante per agros
dicitur occurrens erubuisse soror :
o quotiens ausae, caneret dum ualle sub alta,
rumpere mugitu carmina docta boues.

What episode is alluded to here ?

2. Explain :—

(*a*) Ima uidebatur talis illudere palla.

(*b*) Laudandae deae.

(*c*) Unda sub aestivum non adeunda canem.

(*d*) Temperet annosum Marcia lympha merum.

(*e*) Laus magna tibi tribuetur in uno
corpore seruato restituisse duos.

(*f*) Appulso tela sonat latere.

(*g*) Fictaque Cumana lubrica terra rota.

B.A. EXAMINATIONS.

THE FIRST CENTURY OF THE ROMAN EMPIRE.

THURSDAY, APRIL 6, 1899 :—2 TO 3 P.M.

1. Discuss the steps by which Augustus developed the principate.

2. How were Spain and Gaul divided under the early empire.

3. What do you know of L. Cornelius Balbus, Boadicea, Scribonia, Cassius Chaerea, L. Quirinius, Gessius Florus, P. Ostorius Scapula, Poppaea Sabina, Rubellius Plautus, Julius Sacrovir.

4. Explain with examples where necessary the terms procurator, legatus Caesaris pro praetore, sexviri Augustales, vigintiviratus, monumentum Ancyranum, consors imperii, delatores, decurio, fiscus, amici Caesaris.

5. Give a genealogical tree showing the connection between the various members of the imperial family who became emperors till 69.

6. What authority did the Senate retain under Augustus ?

FOURTH YEAR—LATIN.

THURSDAY, APRIL 6TH:—3 TO 5.30 P.M.

FOR LATIN PROSE.

The Dictator, as soon as he arrived, ordered the lictors to seize Fabius, who took refuge among the veterans; and after a long struggle the latter was obliged to let matters stand over till the next day. Meantime, Fabius fled to Rome and appeared before the Senate to tell his story. But Papirius pursuing him, entered the Senate house and ordered the lictors to arrest him. A scene of great violence followed; and at length the Dictator was obliged to yield to the wishes of both Senate and people. But the pardon he granted was forced and ungracious, and on his return to the camp he found the army ripe for mutiny and unwilling to fight. Then even his stubborn will gave way; he found it necessary to curb his angry temper, and adopt gentler manners; till at length, having recovered the good-will of the soldiery, he again attacked the enemy and again defeated them.

A. FOR UNSEEN TRANSLATION.

THE GARDEN OF EDEN.

Parte alia speluncae et saxea tecta recessus
dant gelidos; quibus immissis uaga uitis habenis
purpureas largitur opes serpitque racemis
luxuriosa. cadunt latices cum murmure cliuis,
dum liquor aut uarius dilabitur aut lacus unum
excipit: hic ripis quas myrtea silua coronat
lucidius uitro speculum mirantibus offert.
nec concentus abest auium: uernaeque uolantes,
quae fragrant quod ager quod lucus odorifer, aurae
irrequieta cient folia ad numerumque figurant:
dum Pan omnipotens Horaeque et Gratia simplex
nexae per choreas inducunt purpureum uer.
non ager, Enna, tuus qua flaua Proserpina, flores
dum resecat, Diti flos pulcrior ipsa resectast—
unde illae Cereri lacrimae atque exercita curis
orbe pererrato uestigia——nec tua, Daphne,
propter Orontaeum flumen laetissima silua,
nec fons Castaliae Musarum instinctus amore
Edeni poterat contendere mollibus hortis.

B THE STYLE OF THE ORATOR M. CALIDIUS.

Cum a nobis paulo ante dictum sit, tria uideri esse, quae orator efficere deberet, ut doceret, ut delectaret, ut moueret; duo summe tenuit, ut et rem illustraret disserendo et animos eorum, qui audirent, deuinciret uoluptate. Aberat tertia illa laus, qua permoueret atque incitaret animos, quam plurimum pollere diximus, nec erat ulla uis atque contentio, siue consilio, quod eos, quorum altior oratio actioque esset ardentior, furere et bacchari arbitraretur, sive quod natura non esset ita factus, sive quod non consuesset sive quod non posset.

HONOUR LATIN.

THIRD YEAR.

I. Translate :—

Quid ais, Eruci? tot praedia, tam pulchra, tam fructuosa Sex. Roscius filio suo relegationis ac supplicii gratia colenda ac tuenda tradiderat? Quid? hoc patres familias, quid liberos habent, praesertim homines illius ordinis ex municipiis rusticanis, nonne optatissimum sibi putant esse, filios suos rei familiari maxime servire et in praediis colendis operae plurimum studiique consumere? An amandarat hunc sic, ut esset in agro ac tantummodo aleretur ad villam? ut coms modis omnibus careret? Quid? si constat hunc non modo colendi-praediis praefuisse, sed certis fundis patre vivo frui solitum esse, tamenne haec vita a te rusticana relegatio atque amandatio appellabitur? Videsne. Eruci, quantum distet argumentatio tua ab re ipsa atque a veritate? Quod consuetudine patres faciunt, id quasi novum reprehendis; quod benevolentia fit, id odio factum criminaris; quod honoris causa pater filio suo concessit, id eum supplicii causa fecisse dicis.

II. Translate and comment on :—

(1) Longo intervallo iudicium inter sicarios hoc primum committitur, cum interea caedes indignissimae maximaeque factae sunt.

(2) Verum ego forsitan propter multitudinem patronorum in grege adnumerer, te pugna Cannensis accusatorem sat bonum fecit. Multos caesos non ad Trasumenum lacum, sed ad Servilium vidimus: quis ibi non est vulneratus férro Phrygio.

(3) Itaque mandati constitutum est iudicium, non minus turpe quam furti, credo propterea quod, quibus in rebus ipsi interesse non possumus, in iis operae nostrae vicaria fides amicorum supponitur, quam qui laedit, oppugnat omnium commune praesidium et, quantum in ipso est, disturbat vitae societatem.

III. Write down the meaning of *officiosus, honoris causa aliquem nominare, nomen deferre, decurionum decretum, insutus in culleum, sectores, Cassiani iudices, me dius fidius palmae lemiscatae, authepsa, stragula vestis, reduviam curare.*

IV. Translate :—

Either (*a*).

Quod si non modo tu, sed quisquam fuisset, qui me Pompeii

minus liberali responso perterritum a turpissimo consilio revocaret, quod unus tu facere maxime potuisti, aut occubuissem honeste aut victores hodie viveremus. Hic mihi ignosces: me enim ipsum multo magis accuso, deinde te quasi me alterum; et simul meae culpa, socium quaero, ac si restituor, etiam minus videbimur deliquisse, abs teque certe, quoniam nullo nostro, tuo ipsius beneficio diligemur. Quod te cum Culleone scribis de privilegio locutum, est aliquid, sed multo est melius abrogari: si enim nemo impediet, quid est firmius? sin erit, qui ferri non sinat, idem senatus consulto intercedet. Nec quicquam aliud opus est abrogari: nam prior lex nos nihil laedebat; quam si, ut est promulgata, laudare voluissemus aut, ut erat neglegenda, neglegere, nocere omnino nobis non potuisset. Hic mihi primum meum consilium defuit, sed etiam obfuit. Caeci, caeci, inquam, fuimus in vestitu mutando, in populo rogando, quod, nisi nominatim mecum agi coeptum esset, fieri perniciosum fuit. Sed pergo praeterita; verum tamen ob hanc causam, ut, si quid agetur, legem illam, in qua popularia multa sunt, ne tangatis.

or alternatively (*b*)

Reliqua sunt eius modi, ut meum consilium saepe reprehendam, quod non aliqua ratione ex hoc negotio emerserim: O rem minime aptam meis moribus! O illud verum ἔρδοι τις! Dices 'quid adhuc? nondum enim in negotio versaris.' Scio, et puto molestiora restare; etsi haec ipsa fero equidem fronte, ut puto, et voltu bellissime, sed angor intimis sensibus: ita multa vel iracunde vel insolenter vel in omni genere stultitiae insulse, adroganter et dicuntur et tacentur cotidie. Quae non quo te celem *non* perscribo, sed quia δυσεξείλητα sunt; itaque admirabere meam βαθύτητα, cum salvi redierimus: tanta mihi μελέτη huius virtutis datur. Ergo haec quoque hactenus; etsi mihi nihil erat propositum ad scribendum, quia, quid ageres, ubi terrarum esses, ne suspicabar quidem, nec hercule umquam tam diu ignarus rerum mearum fui, quid de Caesaris, quid de Milonis nominibus actum sit: ac non modo nemo sed ne rumor quidem quisquam, ut sciremus, in re publica quid ageretur. Qua re si quid erit, quod scias de iis rebus, quas putabis scire me velle, per mihi gratum erit, si id curaris ad me perferendum. Quid est praeterea? nihil sane nisi illud: valde me Athenae delectarunt, turbae dumtaxat et urbis ornamentum et hominum amores in te et in nos quaedam benevolentia.

V. Translate and explain :—

(1) Placet enim Hector ille mihi Naevianus, qui non tantum 'laudari' se laetatur, sed addit etiam 'a laudato viro.'

(2) Itaque, quoniam vestrae cautiones infirmae sunt, Graeculam tibi misi cautionem chirographi mei.

(3) Quo die haec scripsi, Drusus erat de praevaricatione a tribunis aerariis absolutus, in summa, quattuor sententiis, cum senatores et equites damnassent.

(4) Eius testamentum deporto Ciceronum signis obsignatum cohortisque praetoriae ; fecit palam te ex libella, me ex teruncio.

VI. (*a*) What opinion have you formed of Cicero's character from the letters you have read? Illustrate your answer, if possible, by quotations and references.

(*b*) Describe Cicero's attitude to Caesar and Pompey at the various stages of their respective careers.

II. HORACE EPISTLES.

1. Translate :—

Cras nato Caesare festus
dat veniam somnumque dies : impune licebit
aestivam sermone benigno tendere noctem.
Quo mihi fortunam, si non conceditur uti ?
Parcus ob heredis curam nimiumque severus,
adsidet insano : potare et spargere flores
incipiam, patiarque vel inconsultus haberi.

Remark on the construction of *fortunam*. Discuss other readings *fortuna* and *fortunae*.

Explain briefly the relation of this passage to the context.

2. Translate with explanatory notes :

Alter, in obsequium plus aequo pronus et imi
derisor lecti, sic nutum divitis horret,
sic iterat voces et verba cadentia tollit,
ut puerum saevo credas dictata magistro
reddere, vel partes mimum tractare secundas ;
alter rixatur de lana saepe caprina,
propugnat nugis armatus ; "Scilicet, ut non
"sit mihi prima fides, et, vere quod placet, ut non
"acriter elatrem, pretium aetas altera sordet."
Ambigitur quid enim ? Castor sciat, an Dolichos plus ;
Brundisium Minuci melius via ducat an Appi.

3. (*a*) Write brief notes on the following philosophers and the schools of philosophy to which they belonged : Aristippus, Empedocles, Epicurus, Democritus.

4. Without translating, discuss grammatical peculiarities :

(*a*) coronari comtemnat Olympia.

(*b*) fruges consumere nati.

(*c*) vir bonus et sapiens dignis ait esse paratus.

(*d*) Iactamus iam pridem omnis te Roma beatum :
sed vereor ne cui de te plus quam tibi credas,
neve putes alium sapiente bonoque beatum.

VIRGIL, AENEID VI.

1. Translate :

Sunt geminae Somni portae : quarum altera fertur
cornea, quae veris facilis datur exitus umbris :
altera candenti perfecta nitens elephanto
sed falsa ad coelum mittunt insomnia Manes.
His ubi tum natum Anchises unaque Sibyllam
prosequitur dictis, portaque emittit eburna :
ille viam secat ad naves, sociosque revisit ;
tum se ad Caietae recto fert limite portum.
Ancora de prora iacitur ; stant litore puppes.

(*a*) What interpretations have been given of the gates mentioned in this passage ?

(*b*) Write a short account of the Roman burial customs, touching on the references to the same in Aeneid VI.

2. Translate, with comments :

(*a*) Adspice, ut insignis spoliis Marcellus opimis
ingreditur, victorque viros supereminet omnes !

(*b*) Igneus est ollis vigor et caelestis origo
seminibus, quantum non noxia corpora tardant
terrenique hebetant artus moribundaque membra.

(*c*) Sate sanguine divum,
Tros Anchisiada, facilis descensus Averno :
noctes atque dies patet atri ianua Ditis :
sed revocare gradum superasque evadere ad auras,
hoc opus, hic labor est.

III. SALLUST, CATILINE.

1. Translate :—

Id adeo more suo videbatur facere. Nam semper in ciuitate, quibus opes nullae sunt, bonis inuident, malos extollunt, uetera odere, noua exop-

tant, odio suarum rerum mutari omnia student, turba atque seditionibus sine cura aluntur, quoniam egestas facile habetur sine damno. Set urbana plebes, ea uero praeceps erat de multis causis. Primum omnium qui ubique probro atque petulantia maxume praestabant, item alii per dedecora patrimoniis amissis, postremo omnes quos flagitium aut facinus domo expulerat, ei Romam sicuti in sentinam confluxerant: deinde multi memores Sullanae uictoriae, quod ex gregariis militibus alios senatores uedebant, alios ita diuites ut regio uictu atque cultu aetatem agerent, sibi quisque, si in armis foret, ex uictoria talia sperabat; praeterea iuuentus, quae in agris manuum mercede inopiam tolerauerat, priuatis atque publicis largitionibus excita urbanum otium ingrato labori praetulerat.

2. Translate and explain :—

(*a*) camera lapideis fornicibus iuncta.

(*b*) et ipse lege Plautia interrogatus erat ab L. Paulo.

(*c*) atque ille egregius adulescens in moderatae fortitudinis morte poenas dedit. Who is referred to?

HONOURS IN LATIN.

THIRD AND FOURTH YEARS.

ROMAN COMEDY AND SATIRE.

SATURDAY, APRIL 1ST :—MORNING, 9 TO 12.

1. Compare the *παράβασις* of Greek Comedy with the prologue of Roman Comedy.

2. Describe the origin and extent of the lyric element in Roman Comedy.

3. Explain the terms Diverbia and Cantica as applied to the divisions of a Latin play.

4. Remark on the pronunciation of final *s* in the Plautine period.

5. What is the probable origin of the word satire? How can you reconcile Quintilian's statement—satira quidem tota nostra est—with the following verse of Horace: hinc omnis pendet Lucilius, hosce secutus? (*Hinc* and *hosce* refer to the Greek comic poets.)

6. Translate and comment on :—

(*a*) Hos quos videtis stare hic captivos duos,
Vincti quia astant, hi stant ambo, non sedent.
Hoc vos mihi testes estis me verum loqui.

(*b*) Verum hercle uero nos parasiti planius.

Quos numquam quisquam neque uocat neque inuocat:
Quasi mures semper edimus alienum cibum.
Vbi res prolatae sunt, quom rus homines eunt:
Semul prolatae res sunt nostris dentibus.

(*c*) Et hic quidem hercle, nisi quid colaphos perpeti
Potis parasitus frangique aulas in caput,
Vel extra portam trigeminam ad saccum ilicet.

(*d*) PH. Vtroqueuorsum rectumst ingenium meum,
Ad te atque [ad] illum: pro rota me uti licet.
Vel ego huc uel illuc uortar, quo imperabitis.
HE. Tu tibi tuopte ingenio prodes plurumum,
Quom seruitutem fers ita ut ferri decet.

(*e*) Quod bonis benefit beneficium, gratia ea grauidast bonis.

(*f*) Nunc barbarica lege certumst ius meum omne persequi.
Consilium qui iniere, quo nos uictu et uita prohibeant,
Is diem dicam, inrogabo multam, ut mihi cenas decem
Meo arbitratu dent, quom cara annona sit. sic egero.

(*g*) HE. Age tu illuc procede, bone uir, lepidum mancupium meum.
ST. Quid me facere oportet, ubi tu talis uir falsum autumas?
Fui ego bellus, lepidus, bonus uir nunquam neque frugi bonae
Neque ero umquam: ne [tu in] spem ponas me bonae frugi fore.
HE. Propemodum ubi loci fortunae tuae sint facile intellegis.
[Si eris uerax, tua ex re facies, ex mala meliusculam.]
Recta et uera loquere: set neque uere [tu] neque recte adhuc
Fecisti umquam. ST. Quod ego fatear, credin pudeat quom autumes?
HE. At ego faciam ut pudeat: nam in ruborem te totum dabo.

7. Translate, commenting on words printed in italics:

(*a*) Ibam forte *via Sacra*, sicut meus est mos,
nescio quid meditans *nugarum*, *totus in illis*:
accurrit quidam notus mihi nomine tantum,
arreptaque manu, 'Quid agis, *dulcissime rerum?*'

(*b*) Ventum erat ad *Vestae*, quarta iam parta diei
praeterita: et casu tunc respondere *vadato*
debebat, quod ni fecisset, *perdere* litem.
'*si me amas*,' inquit, 'paulum hic *ades* inteream si
aut valeo stare aut novi civilia iura.

(*c*) Magnum hoc ego duco,
quod placui tibi, qui *turpi* secernis honestum,
non *patre praeclaro*, sed vita et pectore puro.

(*d*) Amicus dulcis, ut aequum est,
cum mea compenset vitiis bona; pluribus hisce

(si modo plura mihi bona sunt) inclinet, amari
si volet; hac lege in trutina ponetur eadem.

(*e*) Omnibus hoc vitium est cantoribus, inter amicos
ut numquam inducant animum cantare rogati,
iniussi numquam desistant. *Sardus* habebat
ille Tigellius hoc. Caesar, qui cogere posset,
si peteret per amicitiam patris atque suam, non
quicquam proficeret; si collibuisset, ab ovo
usque ad mala citaret '*Io Bacche!*' modo *summa*
voce, modo hac resonat quae *chordis* quattuor *ima*.

(*f*) Saepe *stilum vertas*, iterum quae digna legi sint
scripturus, neque te ut miretur turba labores,
contentus paucis lectoribus. An tua demens
vilibus in ludis dictari carmina malis?
non ego; nam satis est *equitem* mihi plaudere, ut audax,
contemptis aliis, explosa Arbuscula dixit.

(*g*) Quod oportet
nos facere, a volgo longe longeque remotos?
Namque esto, populus Laevino mallet honorem
quam Decio mandare novo, censorque moveret
Appius, ingenuo si non essem patre natus:
vel merito, quoniam in propria non pelle quiessem

Give different interpretations of this passage.

THIRD AND FOURTH YEARS—HONOURS LATIN.

TRANSLATION AT SIGHT.

FRIDAY, 7TH APRIL—2 TO 5 P.M.

Translate into English—

I. Huius generis orationibus frustra habitis, et consule creato M. Atilio Regulo, ne praesens de iure imperii dimicaret, pridie quam rogationis ferendae dies adesset, nocte ad exercitum abiit. Luce orta, quum plebis concilium esset magis tacita invidia dictatoris favorque magistri equitum animos versabat, quam satis audebant homines ad suadendum, quod vulgo placebat, prodire: et favore superante auctoritas tamen rogationi deerat. Unus inventus est suasor legis C. Terentius Varro, qui priore anno praetor fuerat, loco non humili solum, sed etiam sordido, ortus. Patrem lanium fuisse ferunt, ipsum institorem mercis, filioque hoc ipso in servilia eius artis ministeria usum. Is iuvenis ubi ex eo genere quaestus pecunia a patre relicta animos ad spem liberalioris fortunae fecit, togaque et forum placuere, proclamando pro sordidis hominibus causisque

adversus rem et famam bonorum, primum in notitiam populi, deinde ad honores pervenit.

II. Fuere qui, prodita coniuratione, dum auditur Milichus, dum dubitat Scevinus, hortarentur Pisonem pergere in castra, aut rostra ascendere studiaque militum et populi tentare: si conatibus eius conscii aggregarentur, secuturos etiam integros, magnamque motae rei famam, quae plurimum in novis consiliis valeret. Nihil adversum hoc Neroni provisum, etiam fortes viros subitis terreri; nedum ille scenicus, Tigellino scilicet cum pellicibus suis comitante, arma contra cieret. Multa experiendo confieri, quae segnibus ardua videantur. Frustra silentium et fidem in tot consciorum animis et corporibus sperari: cruciatu aut praemio cuncta pervia esse. Venturos qui ipsum quoque vincirent, postremo indigna nece afficerent. Quanto laudabilius periturum, dum amplectitur rempublicam, dum auxilia libertati invocat? Miles potius deesset, et plebes desereret, dum ipse maioribus, dum posteris, si vita praeriperetur, mortem approbaret. Immotus his et pallulum in publico versatus, post domi secretus, animum adversum suprema firmabat; donec manus militum adveniret, quos Nero tirones aut stipendiis recentes delegerat: nam vetus miles timebatur tanquam favore imbutus. Obiit abruptis bracchiorum venis.

III. Te si forte iuvat studiorum pondere fessum
Non languere tamen lususque mouere per artem,
Callidiore modo tabula uariatur aperta
Calculus et uitreo peraguntur milite bella,
Vt niueus nigros, nunc et niger alliget albos.
Sed tibi quis non terga dedit? quis te duce cessit
Calculus? aut quis non periturus perdidit hostem?
Mille modis acies tua dimicat: ille petentem
Dum fugit, ipse rapit; longo uenit ille recessu,
Qui stetit in speculis; hic se committere rixae
Audet et in praedam uenientem decipit hostem;
Ancipites subit ille moras similisque ligato
Obligat ipse duos: hic ad maiora mouetur,
Vt citus ecfracta prorumpat in agmina mandra
Clausaque deiecto populetur moenia uallo,
Interea sectis quamuis acerrima surgant
Proelia militibus, plena tamen ipse phalange
Aut tantum pauco spoliata milite uincis,
Et tibi captiua resonat manus utraque turba

THIRD AND FOURTH YEARS—HONOURS LATIN.

8TH APRIL:—9 A. M. TO 12 NOON.

TACITUS, *Dialogus de Oratoribus.* CICERO, *pro Milone.*

I. Translate:—

(*a*) Praecurrit hoc tempore iudex dicentem, et nisi aut cursu argumentorum aut colore sententiarum aut nitore et cultu descriptionum invitatus et corruptus est, aversatur. vulgus quoque adsistentium et adfluens et vagus auditor adsuevit iam exigere laetitiam et pulchritudinem orationis; nec magis perfert in iudiciis tristem et impexam antiquitatem, quam si quis in scaena Roscii aut Turpionis Ambivii exprimere gestus velit. iam vero iuvenes [et] in ipsa studiorum incude positi, qui profectus sui causa oratores sectantur, non solum audire, sed etiam referre domum aliquid inlustre et dignum memoria volunt traduntque in vicem ac saepe in colonias ac provincias suas scribunt, sive sensus aliquis arguta et brevi sententia effulsit, sive locus exquisito et poetico cultu enituit. exigitur enim iam ab oratore etiam poeticus decor, non Accii aut Pacuvii veterno inquinatus, sed ex Horatii et Vergilii et Lucani sacrario prolatus. horum igitur auribus et iudiciis obtemperans nostrorum oratorum aetas pulchrior et ornatior extitit.

(*b*) Vulgata dicentium gaudia et imperitorum quoque oculis exposita percenseo: illa secretiora et tantum ipsis orantibus nota maiora sunt. sive accuratam meditatamque profert orationem, est quoddam sicut ipsius dictionis, ita gaudii pondus et constantia; sive novam et recentem curam non sine aliqua trepidatione animi attulerit, ipsa sollicitudo commendat eventum et lenocinatur voluptati.

(*c*) Ex his fontibus etiam illa profluunt, ut facilius iram iudicis vel instiget vel leniat, qui scit quid ira *sit*, et promptius ad miserationem impellat, qui scit quid sit misericordia et quibus animi motibus concitetur. in his artibus exercitationibusque versatus orator, sive apud infestos sive apud cupidos sive apud invidentes sive apud tristes sive apud timentes dicendum habuerit, tenebit venas animorum, et prout cuiusque natura postulabit, adhibebit manum et temperabit orationem, parato omni instrumento et ad omnem usum reposito.

II. Translate and comment on:—

(1) Neque enim defuit qui diversam quoque partem susciperet ac multum vexata et inrisa vetustate nostrorum temporum eloquentiam antiquorum ingeniis anteferret.

(2) Cum offendissepotentium animos diceretur, tamquam in eo tragoediae argumento sui oblitus tantum Catonem cogitasset.

(3) Quid aliud infestis patribus nuper Eprius Marcellus quam eloquentiam suam opposuit? qua accinctus et minax diseriam quidem, sed inexercitatam et eius modi certaminum rudem Helvidii sapientiam elusit.

(4) Non me fremitus salutantium nec anhelans libertus excitet, nec incertus futuri testamentum pro pignore scribam, nec plus habeam quam quod possim cui velim relinquere.

(5) Nam multum interest, utrumne de furto aut formula et interdicto dicendum habeas an de ambitu comitiorum, expilatis sociis et civibus trucidatis.

(6) Sed nec tanti rei publicae Gracchorum eloquentia fuit, ut pateretur et leges, nec bene famam eloquentiae Cicero tali exitu pensavit.

III. Give the meaning of *disertus, advocatus, altercatio, arcana semotae dictionis, assiduitas contubernii, tunicatus hic populus, sine commendatione natalium, imagines ac tituli et statuae, elegorum lasciviae, odorari philosophiam, hians compositio, nominis controversia, calamistri Maecenatis, histrionalis favor, sectator iudiciorum.*

IV. Translate :—

(*a*) Vide, quam sit varia vitae commutabilisque ratio, quam vaga volubilisque fortuna, quantae infidelitates in amicitiis, quam ad tempus aptae simulationes, quantae in periculis fugae proximorum, quantae timiditates. Erit, erit illud, profecto tempus, et illucescet aliquando ille dies, cum tu salutaribus, ut spero, rebus tuis, sed fortasse motu aliquo communium temporum (qui quam crebro accidat, experti scire debemus), et amicissimi benevolentiam et gravissimi hominis fidem et unius post homines natos fortissimi viri magnitudinem animi desideres.

(*b*) Nihil sane id prosit Miloni, quil hoc fato natus est, ut ne se quidem servare potuerit, quin una rem publicam vosque servaret. Si id iure fieri non potuit, nihil habeo, quod defendam. Sin hoc et ratio doctis et necessitas barbaris et mos gentibus et feris etiam beluis natura ipsa praescripsit, ut omnem semper vim, quacumque ope possent, a corpore, a capite, a vita sua propulsarent, non potestis hoc facinus improbum iudicare, quin simul iudicetis omnibus, qui in latrones inciderint, aut illorum telis aut vestris sententiis esse pereundum.

(*c*) Quid? si ipse Cn. Pompeius, qui ea virtute ac fortuna est, ut ea potuerit semper quae nemo praeter illum, si is, inquam, potuisset aut quaestionem de morte P. Clodi ferre aut ipsum ab inferis excitare, utrum putatis potius facturum fuisse? Etiamsi propter amicitiam vellet illum ab inferis avocare, propter rem publicam non fecisset. Eius igitur mortis sedetis ultores, cuius vitam si putetis per vos restitui posse, nolitis, et de eius nece lata quaestio est, qui si lege eadem reviviscere posset, lata lex numquam esset. Huius ergo interfector si esset, in confitendo ab iisne poenam timeret, quos liberavisset?

V. Translate and comment on :—

(*a*) Decernebat enim, ut veteribus legibus tantum modo extra ordinem quaereretur. Divisa sententia est postulante nescio quo; nihil nime necesse est omnium me flagitia proferre. Sic reliqua auctoritas senatus empta intercessione sublata est.

(*b*) Itaque illud Cassianum, cui bono fuerit, in his personis valeat.

(*c*) Quam ob rem uteretur eadem confessione T. Annius qua Ahala, qua Nasica, qua Opimius, qua Marius, qua nosmet ipsi.

(*d*) Meminit etiam sibi vocem praeconis modo defuisse, quam minime desiderarit, populi vero cunctis suffragiis, quod unum cupierit, se consulem declaratum.

VI. (1) What was meant by the terms *Asiatic* and *Attic* as applied to oratorical style?

(2) State briefly what you know of the nature of the *quaestio* before which Milo was tried. Give the date of his trial and its issue.

(3) Give any of the ancient definitions of Rhetoric, and briefly estimate the influence and importance of oratory in the public and private life of the Greeks and Romans.

B.A. HONOURS EXAMINATIONS.

Lucretius V. and Martial V.

Tuesday, April 4th, 1899:—9 to 12 a.m.

1. Translate:—

(*a*) Tempore item certo roseam Matuta per oras
aetheris auroram differt et lumina pandit,
aut quia sol idem, sub terras ille reuertens,
anticipat caelum radiis accendere temptans,

aut quia conueniunt ignes et semina multa
confluere ardoris consuerunt tempore certo,
quae faciunt solis noua semper lumina gigni ;
quod genus Idaeis fama est e montibus altis
dispersos ignis orienti lumine cerni,
inde coire globum quasi in unum et conficere orbem.
nec tamen illud in his rebus mirabile debet
esse, quod haec ignis tam certo tempore possunt
semina confluere et solis reparare nitorem.
multa uidemus enim, certo quae tempore fiunt
omnibus in rebus, florescunt tempore certo
arbusta et certo dimittunt tempore florem.

(*b*) Praeterea cui non animus formidine diuum
contrahitur, cui non correpunt membra pauore,
fulminis horribili cum plaga torrida tellus
contremit et magnum percurrunt murmura caelum ?
non populi gentesque tremunt, regesque superbi
corripiunt diuum percussi membra timore,
nequid ob admissum foede dictumve superbe
poenarum graue sit soluendi tempus adultum ?

2. Translate :—

(*a*) Quod superest, nunc huc rationis detulit ordo,
ut mihi mortali consistere corpore mundum
natiuomque simul ratio reddunda sit esse.

(*b*) Denique non monimenta uirum delapsa uidemus
quaerere proporro sibi sene senescere credas.

(*c*) Nam fieri uel cum primis id posse uidetur
quanto quaeque magis sint terram sidera prop,
tanto posse minus cum caeli turbine ferriter.

(*d*) menstrua dum rigidas coni perlabitur umbras.

(*e*) uiua uidens uiuo sepeliri uiscera busto.

(*f*) uersaque in obprobrium species est falcis ahenae.

(*g*) Inde boues lucas turrito corpore, taetras
anguimanus, belli docuerunt uulnera Poeni
sufferre.

(*h*) Dum plebeia tamen sit quae defendere possit

(*i*) Nec multo priu' sunt elementa reperta.

3. Notice any differences between the rhythm and prosody of Lucretius

and those of Virgil. Comment in this connection on the following lines :—

(*a*) per terras amnes atque oppida cooperuisse
(*b*) ordine se suo quaeque sagaci mente locarunt
(*c*) his igitur rebus retractis terra repente
(*d*) accedere ex una scintilla incendia passim
(*e*) tempore cur certo nequeat recreareque lumen.
(*f*) nympharum quibus e scibant umori fluenta
(*g*) nec poterant ullam partem redducere eorum.

4. Name our principal M.S. sources for Lucretius, and mention any editors who have done service in restoring his text.

5. Translate :—

(*a*) Supremas tibi triciens in anno
signanti tabulas, Charine, misi
Hyblaeis madidas thymis placentas.
Defeci : miserere iam, Charine.
Signa rarius, aut semel fac illud,
mentitur tua quod subinde tussis.
Excussi loculosque sacculumque.
Croeso diuitior licet fuissem,
Iro pauperior forem, Charine,
si conchem totiens meam comesses.

(*b*) Non deerunt tibi, si soles *propinein*,
viles Cappadocae grauesque porri.
diuisis cybium latebit ouis,
ponetur digitis tenendus ustis
nigra coliculus uirens patella,
algentem modo qui reliquit hortum :
et pultem niueam premens botellus,
et pallens faba cum rubente lardo.

6. Translate with a brief note of explation :—

(1) Sic Burrus cito sentiat parentem.
(2) Sic laudant Catuli uilia templa senes.
(3) et libertinas arca flagellat opes.
(4) Cum minimum uati munus Alexis erat.
(5) Campus, porticus, umbra, uirgo, thermae.
(6) Qui nobis pereunt et imputantur.
(7) Et poterant fallere plana magis.

(8) Quam pessimorum lex amara fatorum
Sexta peregit hieme, nec tamen tota.

(9) Si te viderit Hercules, peristi.

7. Quote any lines of Martial referring to

(*a*) Places of resort in Italy outside of Rome.

(*b*) Murder of Cicero.

(*c*) Non qualified persons sitting among the knights.

(*d*) Martial's parents.

(*e*) Long distances in Rome to persons paying visits.

(*f*) The Saturnalia.

N.B.—Only 3 of the options in question 7 to be attempted.

B.A. CLASSICAL HONOURS.

COMPARATIVE PHILOLOGY AND ROMAN LITERATURE.

N.B.—*A and B to be shewn up in separate books.*

THURSDAY, APRIL 13TH:—MORNING, 9 TO 10.30.

A.—COMPARATIVE PHILOLOGY.

1. Explain, with examples, ablaut, compensatory lengthening, parasitic vowels and consonants, syncope, apocope, dissimilation and disappearance of syllables by dissimilation, rhotacism, nasal consonants, metathesis, prothesis.

2. Give the probable Indo-Germanic termination of the Genitive plural, and the origin of the various forms in Greek and Latin, with illustrations.

3. Explain the formation of the accusative singular and plural in Greek and Latin.

4. What forms in Greek and Latin are derived from the original Locative case? What original cases are represented in the dative of these two languages? Compare πατρί and patri.

5. Give the declension of ναῦς with dialectic forms, explaining their origin.

6. Show the formation of the Optative Mood in Greek and Latin.

7. Remark on the origin of the various infinitive forms in Greek and Latin.

8. Remark on the three kinds of reduplications found in the verb, and the difference between Greek and Latin reduplication.

9. Explain the origin of the following forms: πόδες, pedes: cives, civis (acc. pl.): πολίεσσι; honor and honos; γένους, carnis, βροτός, pars, miles, fructu, Ζῆν, hic, huius, ἵημί, sero, legimini, vidissem: sequeris and sequere carcer; venio and βαίνω.

B.—ROMAN LITERATURE OF THE REPUBLIC.

1. Give an analysis of any one of the plays of Plautus (not the Captiui, Trinummus or Rudens).

2. Explain the terms, Fabula Atellana, Mimus, Fabula Togata, Fabula Praetexta, annales, historia, uersus Fescennini, Asatic school, Saturnian metre, libri lintei, young Attic school.

3. Mention any Roman historians who wrote in Greek. What do you know of the works of the historians L. Cassius Hemina, G. Fannius Strabo, L. Caelius Antipater, Sempronius Asellio, L. Aemilius Scaurus, Claudius Quadrigarius, Valerius Antias, L. Cornelius Sisenna, A. Hirtius.

4. Give an account of the literary activity of Varro.

5. Discuss the authorship of the lives ascribed to Cornelius Nepos.

6. A short account and criticism of the poems of Catullus.

7*a*. Enumerate the rhetorical works of Cicero, and give their chronology.

7*b*. (If 7*a* is omitted). Which speeches of Cicero were delivered before Caesar? With what do they respectively deal?

8. What causes have contributed to prevent more monuments of Latin literature from surviving? Name any important manuscripts known to have existed up to the 15th century that are now lost.

B. A. CLASSICAL HONOURS.

TACITUS ANNALS I AND PERSIUS.

APRIL, 1899.

1. Translate :—

Quod nomen huic coetui dabo? Militesne appellem, qui filium imperatoris uestri uallo et armis circumsedistis? an ciues, quibus tam proiecta senatus auctoritas? Hostium quoque ius et sacra legationis et fas gentium rupitis. Diuus Iulius seditionem exercitus verbo uno compescuit, Quirites uocando, qui sacramentum eius detrectabant; diuus Augustus uoltu et aspectu Actiacas legiones exterruit: nos, ut nondum eosdem, ita ex illis ortos, si Hispaniae Syriaeve miles aspernaretur, tamen mirum et indignum erat; primane et uicesima legiones, illa signis a Tiberio acceptis, tu tot proeliorum socia, tot praemiis aucta, egregiam duci uestro gratiam refertis? Hunc ego nuntium patri laeta omnia aliis e prouinciis audienti, feram? ipsius tirones, ipsius ueteranos non missione, non pecunia satiatos; hic tantum interfici centuriones eici tribunos, includi legatos: infecta sanguine castra, flumina, meque precariam animam inter infensos trahere.

2. Translate :—

(*a*) Postremo promptis iam, et aliis seditionis ministris, uelut contionabundus interrogabat.

(*b*) Ait parum in tempore incipientes principis curas onerari.

(*c*) Qui e seruitio Blaesi erant.

(*d*) Cui militaribus facetiis uocabulum cedo alteram indiderant.

(*e*) Quamquam maestitiam imitarentur, contumaciae propiores.

(*f*) Sic melius audituros responsum est.

(*g*) Strictum obtulit gladium addito acutiorem esse.

(*h*) Referebant quot patibula captiuis, quae scrobes; utque signis et aquilis per superbiam inluserint.

(*i*) Quadragesimum id stipendium Caecina parendi aut imperitandi habebat.

(*k*) Ducemque terruit dira quies.

(*l*) Amissa magna ex parte, per quae egeritur humus aut exciditur caespes.

(*m*) Non tamen ideo faciebat fidem ciuilis animi.

(*n*) Centesimam rerum uenalium, post bella ciuilia institutam, deprecante populo, edixit Tiberius militare aerarium eo subsidio niti.

3. Translate :—

Ecce auia aut metuens diuum matertera, cunis
exemit puerum, frontemque atque uda labella
infami digito et lustralibus ante saliuis
expiat, urentes oculos inhibere perita.
Tunc manibus quatit, et spem macram supplice uoto
nunc Licini in campos, nunc Crassi mittit in aedes
'Hunc optent generum rex et regina : puellae
hunc rapiant : quicquid calcauerit hic rosa fiat.'
Ast ego nutrici non mando uota ; negato,
Jupiter, haec illi quamuis te albata rogarit.
Poscis opem neruis corpusque fidele senectae.
Esto age : sed grandes patinae tucetaque crassa
annuere his superos uetuere Iovemque morantur.

4. Translate, adding a brief note where necessary :—

(*a*) O mores : usque adeone
Scire tuum nihil est nisi te scire hoc sciat alter?

(*b*) Hoc ego opertum,
hoc ridere meum, tam nil, nulla tibi uendo
Iliade.

(*c*) Hand cuiuis promptum est murmurque humilesque susurros
tollere de templis et aperto uiuere uoto.

(*d*) Disce neque inuideas quod multa fidelia putet
in locuplete penu defensis pinguibus Umbris,
et piper et pernae, Marsi monumenta clientis ;
maenaque quod prima nondum defecerit orca.

(*e*) Et potis es nigrum uitio praefigere theta.

(*f*) Tecum habita, noris quam sit tibi curta supellex.

(*g*) Cultor enim iuuenum purgatas inseris aures
fruge Cleanthea.

(*h*) Continuo crassum ridet Uulfenius ingens,
et centum Graecos curto centusse licetur.

(*i*) Quid praeparet Auster
infelix pecori securus, et angulus ille
uicini nostro quia pinguior.

(*k*) Quaere ex me quis mihi quartus
sit pater : hand prompte, dicam tamen ; adde etiam unum,
unum etiam, terrae est iam filius : et mihi ritu
Manius hic generis prope maior auunculus exit.

ENGLISH LANGUAGE AND LITERATURE.

SESSIONAL EXAMINATIONS.

FIRST YEAR.

ENGLISH LITERATURE AND COMPOSITION.

FRIDAY, 7TH APRIL :—MORNING, 9 TO 12.30.

(N.B.—Answers to A and B are to be written in separate books.)

A. LITERATURE.

1. Write short notes on: The beginnings of periodical literature in England; The coffee-house and its influence on literature; The Spectator as a reformer of manners and customs. Support your statements with facts.

2. Describe briefly the nature and purpose of each of the following literary compositions; name its author (or authors), and give the date (or dates) of its appearance: An Essay on Projects, Martinus Scriblerus, The Vision of Mirza, A Short View of the Immorality and Profaneness of the English Stage, The Idler.

3. Write an outline account of the literary life and labours of any *one* of the following: Bolingbroke, Steele, Goldsmith. Give dates.

4. Discuss: The character of Swift's Satire; The changes effected by Dryden in the writing of English prose; The latinity of Samuel Johnson's style. Prove your statements with the help of specific quotations.

B. ENGLISH COMPOSITION.

1. Explain, and illustrate with *original* examples: Solecism, Neologism, Conciseness, Balanced, Sentence, Periodic Sentence.

2. State clearly what is meant by Coherence in Sentences; and give *original* examples of sentences, coherent and incoherent, consisting of not less than twenty words.

3. Enumerate the principal conditions to be observed in the proper construction of paragraphs, and discuss fully the nature of any *one*.

4. Writh an essay of not less than three pages on any *one* of the following subjects:—

(*a*) Public Spirit.
(*b*) Khartoum.
(*c*) A Pleasant Journey.

SESSIONAL EXAMINATIONS.

FIRST YEAR.

HISTORY.

FRIDAY, APRIL 7TH:—2 TO 4 P.M.

1. (*a*) Enumerate the divisions of the Greek race: define the extent of Greek colonization, and explain the character of the same.

(*b*) Mention, with illustrations of each, the chief types of government among the Greeks.

2. (*a*) Dwell upon the relations which existed between Rome and Etruria.

(*b*) How did the family act as a social and political unit in the early life of Rome?

(*c*) Discuss the question of the magistracies at Rome.

3. Indicate under separate heads the chief characteristics of the First and Second Punic Wars.

4. Describe the aims, measures and fate of Caius Gracchus.

5. Write briefly but clearly on the following points:

(*a*) Spartan character.

(*b*) The main effect on later history of the conquests which were won by Alexander the Great.

(*c*) The origin of Rome.

(*d*) The Plebeian secessions.

INTERMEDIATE EXAMINATIONS.

MODERN HISTORY.

FRIDAY, APRIL 7TH:—9 TO 12 A.M.

Note.—McGill College students will answer the first seven questions. Morrin College students will answer any four of the first seven, together with the three last questions.

1. Describe each of the following episodes as representative of some one phase of the French Revolution.

(*a*) The Séance Royale;

(*b*) The Flight to Varennes;

(*c*) The Festival of the Supreme Being.

2. (*a*) Describe the Republican Calendar considered merely as a means of reckoning time.

(*b*) What general ideas of its framers does it reflect?

(*c*) Mention with some detail a prominent event connected with each of the three months, Thermidor, Fructidor and Brumaire; and state in which year of the Republican era it occurred.

3. What do you know concerning the creation of these states?

(*a*) The Helvetic Republic;

(*b*) The Confederation of the Rhine;

(*c*) Belgium.

4. Give each of the following treaties its historical setting, and state where you can the precise terms which were agreed to by the powers interested:

(*a*) Campo Formio;

(*b*) Lunéville;

(*c*) Amiens;

(*d*) Presburg.

5. Regard (*a*) The Legion of Honour;

b) The Bank of France;

(*c*) The imperial system of education; from the standpoint of Napoleon's own ideas about government. Connect them also where you can with the principles of the Revolution.

6. (*a*) Sketch the character of the German *Bund*, which was created in 1815;

(*b*) Trace its vicissitudes as a federation to 1851;

(*c*) Explain the bearing of the Schleswig-Holstein question on Bismarck's general policy, and trace the main complications springing from it down to the Gastein Convention.

7. (*a*) How was political power divided in Italy immediately after the Congress of Vienna closed?

(*b*) What typical differences of opinion existed among Italian patriots between the accession of Charles Albert and that of Pope Pius IX?

(*c*) By what means was Piedmont invested with the leadership of the national cause?

8. What causes led to the Revolution of 1848 in France? What results followed it (*a*) In Prussia?

b) In Austria?

9. Indicate clearly (*a*) The results of the battle of Sadowa ;

(*b*) The arrangements Napoleon III had made for allies in his struggle with Prussia in 1870 ;

(*c*) The ostensible reason for that war.

10. What advances have been made by the lower classes during the past hundred years—(*a*) In personal freedom ?

(*b*) In political rights ?

(*c*) In public education ?

In your answer refer to the following countries : Germany, France, Russia, Italy.

SESSIONAL EXAMINATIONS, 1899

THIRD YEAR.

ENGLISH AND RHETORIC. (*First Paper*).

CHAUCER :—*Prologue to Canterbury Tales.*

FRIDAY, APRIL 7th—2 to 4 P.M.

1. Illustrate from the *Prologue* the Chaucerian age in respect of (*a*) piracy, (*b*) sport, (*c*) polite accomplishments, mentioning as you write, the pilgrims from whose descriptions you are borrowing.

2. Give in Chaucer's language three examples of his love of colour and three of his humour, no two being taken from the same sketch.

3. Refer each of the following lines to its place in the *Prologue* and give its context :

(*a*) He was in chirche a noble ecclesiaste

(*b*) And evermore he hadde a sovereign prys

(*c*) A gerland hadde he set upon his heed

(*d*) And al was conscience and tendre herte

(*e*) A love-knotte in the gretter ende ther was

(*f*) They were adrad of him as of the deeth

(*g*) But he was lyk a maister or a pope

(*h*) Ther was no dore that he nolde heve of harre

(*i*) In sangwin and in pers he clad was al

(*j*) He was also a lerned man, a clerk

4. Make notes on the following words and phrases and say where they occur, bearing in mind that in case a word or phrase occurs more than once, one reference will suffice : me thinketh ; his hors were goode ; rote ; tappestere ; wered ; mortreux ; crulle ; the ascendent Of his images ; somdel ; for-pyned.

5. Describe the Frankeleyn and the Reve.

SESSIONAL EXAMINATIONS.

THIRD YEAR.

RHETORIC.

FRIDAY, 7TH APRIL:—AFTERNOON, 4 TO 4.

(N.B.—Additional marks will be given for excellence of method and expression.)

1. Discuss, fully and independently, Swift's definition of Style as "Proper words in proper places."

2. What is the philosophical distinction between the Metaphor and the Simile? Explain fully the application of that distinction to the respective employment of these two figures of speech, and support you answer with *original* examples, or with quotations *not* given in the text-book or the lectures.

3. Explain and illustrate: Paraphrase, Anticlimax, Amplification, Obverse Iteration. Discuss carefully the value of any *two* of these processes with regard to use and effect in composition.

4. What does a contemporary critic mean by the assertion that "all effective description has its *mechanical*, as well as its *dynamical*, element"? How does this influence the framing of *rules* for description?

5. Give a synopsis of possible divisions of a speech on "The Czar's Proposal of Disarmament," or "The Removal of Duties on Books," *pro* or *contra*, as you prefer.

6. Of the following subjects, select *one*, to be treated in not less than three pages:—

A.—A summary of an important book, recently read.

B.—Account and criticism of a work of contemporary fiction or drama.

C.—The Growth of the Spirit of Imperialism.

B.A. EXAMINATION IN ENGLISH LITERATURE.

POETS OF THE NINETEENTH CENTURY (*First Paper*).

FRIDAY, APRIL 7TH:—2 TO 4 P.M.

(Students of McGill College will answer the questions under A; students of Morrin College those under B.)

A

1. Write, within the limits of a page, your impressions of the *Princess.*

2. Contrast *Lycidas*, *Adonais* and *In Memoriam.*

Trace carefully, and within the limits of two pages, the main course of thought in *In Memoriam.*

3. (*a*) Write on allegory in the *Idylls.*

(*b*) Name important sources whence Tennyson derived material for the *Idylls.*

(*c*) Mention six important deviations from those sources, and show very briefly how each bears on the poet's conception of the whole work. (Do not take more than one from any Idyll.)

4. Briefly indicate the cardinal beliefs expressed in *Christmas Eve and Easter Day.*

B

1. Compare Wordsworth and Byron in their treatment of Nature,

or

In their treatment of character.

2. Discuss Shelley's view of History; or Keats's view as to the significance of beauty.

3. How does Browning treat the problem of evil?

or

Examine his treatment of love.

4. It has been said that Browning and Tennyson are complementary poets. What may be said in support of this view?

5. "Tennyson was in the main orthodox." Indicate clearly, by reference to poems or passages, some important points on which Tennyson "was in the main orthodox."

B. A. EXAMINATION IN ENGLISH LITERATURE.

POETS OF THE NINETEENTH CENTURY. (*Second Paper.*)

FRIDAY, APRIL 7TH, 1899:—4 TO 6 P.M.

1. Give a sketch of Bishop Blougram's Apology, Cain and Christabel.

2. State in what poems the following extracts occur, and give some idea of the connection of any *twenty* of them.

(*a*) Peach-blossom marble all, the rare, the ripe,
As fresh-poured red wine of a mighty pulse.

(*b*) The blessing of my later years
Was with me when a boy.

(*c*) Where the mermaid is decking
Her green hair with pearls.

(*d*) Round many western islands have I been
Which bards in fealty to Apollo hold.

(*e*) Thy soul was like a star, and dwelt apart;
Thou hadst a voice whose sound was like the sea.

(*f*) Our laws and our worship on thee shalt thou take.

(*g*) And bravely furnished all abroad to fling
The winged shafts of truth.

(*h*) There came and looked him in the face
An angel beautiful and bright.

(*i*) When the frothy spume and frequent sputter
Prove that the soul's depths boil in earnest.

(*j*) And before the angel summoned her,
She laid on the water a spell.

(*k*) Or as Lear I poured forth the deep imprecation.

(*l*) Our sweetest songs are those that tell of saddest thought.

(*m*) Never to blend our pleasure or our pride
With sorrow of the meanest thing that feels.

(*n*) Driving sweet buds like flocks to feed in air.

(*o*) Beheld the Iliad and the Odyssee
Rise to the swelling of the voiceful sea.

(*p*) Oh, the wild joys of living! the leaping from rock up to rock.

(*q*) Ten thousand saw I at a glance
Tossing their heads in sprightly dance.

(*r*) Here mingling view the names of sire and son.

(*s*) And visited all night by troops of stars
Or when they climb the skies or when they sink.

(*t*) And wearied out, he sunk to sleep,—
To sleep—but not to rest.

(*u*) And quoted odes, and jewels five-words-long,
That on the stretched forefinger of all Time
Sparkle forever.

(*v*) More pettishly we try and cull
Briers, thistles from our private plot,
To mar God's ground where thorns are not.

(*w*) Ah happy, happy boughs! that cannot shed
Your leaves, nor ever bid the Spring adieu.

(*x*) And he passed between the horns of the moon.

(*y*) Like the bubbles on a river
Sparkling, bursting, borne away.

(*z*) We wear a face of joy, because
We have been glad of yore.

(1) Appalled he signs the frequent cross,
When the wild din invades his ears.

(2) There was a listening fear in her regard
As if calamity had but begun.

(3) But oh! each visitation
Suspends what nature gave me at my birth,
My shaping spirit of imagination.

(4) Ah, but a man's reach should exceed his grasp
Or what's a heaven for?

EXAMINATION FOR HONOURS IN ENGLISH.

THIRD YEAR.

ANGLO-SAXON (*First Paper*).

THURSDAY, MARCH 30TH :—9 TO 11 A.M.

1. Translate :

(*a*) Tha wæs he swa feorr north swa tha hwælhuntan firrest farath. Tha for he thagiet northryhte swa feorr swa he meahte on thæm othrum thrim dagum gesiglan. Tha beag thæt land thær eastryhte, oththe seo sæ inn on thæt lond, he nysse hwæther, buton he wisse thæt he thær bad westanwindes ond hwon northan, ond siglde tha east be lande swa swa he meahte on feower dagum gesiglan. Tha sceolde he thær bidan ryhtnorthanwindes, for thæm thæt land beag thær suthryhte, oththe seo sæ inn on thæt land, he nysse hwæther.

beag; bad: give the past tense of both verbs in full. Make a note on the forms *buton, northan*

(*b*) He wæs swyde spedig mann on thæm æhtum the heora speda on beoth, thæt is, on wildrum. He hæfde thagyt, tha he thone cyningc sohte, tamra deora unbebohtra syx hund. Tha deor hi hatath 'hranas;' thara wæron syx stælhranas; tha beoth swythe dyre mid Finnum, for thæm hy foth tha wildan hranas mid.

Make a note on the forms *spedig, cyningc.* Parse *the* and *unbebohtra.*

2. On thys geare, thæt wæs ymb twelf monath thæs the hie on thæm eastrice geweorc geworht hæfdon. Northymbre ond Eastengle hæfdon Ælfrede cyninge athas geseald, ond Eastengle foregisla vi: ond theh ofer tha treowa, swa oft swa tha othre hergas mid ealle herige ut foron, thonne foron hie, oththe mid oththe on heora healfe an.

Give the chief meanings of *thæs.* Decline *Eastengle.* Parse *foregisla, geseald.*

3. Sæt smith sloh seax lytel
iserne wund swithe:
ut lytel spere, gif her-inne sy!
Syx smithas sætan, wælspera worhtan:
ut, spere; næs inn, spere!
gif her-inne sy isenes dæl
hægtessan geweorc hit sceal gemyltan!
Gif thu wære on fell scoten, oththe wære on flæsc scoten,
oththe wære on blod scoten,
oththe wære on lith scoten, næfre ne sy thin lif atæsed!

*G*yrede hine Beowulf
*eo*rlgewædum, nalles for *ea*ldre mearn;
scolde *h*erebyrne *h*ondum gebroden,
*s*id and *s*earofah, *s*und cunnian,
seo the *b*ancofan *b*eorgan cuthe,
thæt him *h*ildegrap *h*rethre ne mihte,
eorres inwitfeng, aldre gesceththan;
ac se hwita helm hafelan werede,
se the meregrundas mengan scolde,
secan sundgebland since geweorthad,
befongen freawrasnum, swa hine fyrndagum
worhte wæpna smith, wundrum teode,
besette swinlicum, thæt hine syththan no
brond ne beadomecas bitan ne meahton.

Scan the passage from *eorlgewædum* to *mihte.*

5. 'Ic the thancige theoda Waldend,
ealra thæra wynna the ic on worulde gebad:
nu ic ah, milde Metod, mæste thearfe,

thæt thu minum gaste godes geunne,
thæt min sawul to the sithian mote,
on thin geweald, theoden engla,
mid frithe ferian ; ic eom frymdi to the,
thæt hi hellsceathan hynan ne moton.'

6. Ic wiht geseah wundorlice
hornum bitweonum huthe lædan,
lyftfæt leohtlic listum gegierwed,
huthe to tham ham of tham heresithe :
walde hyre on thære byrig bur atimbran,
searwum asettan gif hit swa meahte.
Da cwom wundorlicu wiht ofer wealles hrof,
seo is eallum cuth eorthbuendum :
ahredde tha tha huthe, and to ham bedraf
wreccan ofer willan, gewat hyre west thonan
fæhthum feran, forth onette.
Dust stonc to heofonum, deaw feoll on eorthan,
niht forth gewat : nænig siththan
wera gewiste thære wihte sith.

---

byrig : what is meant ?

EXAMINATION FOR HONOURS IN ENGLISH.

THIRD YEAR.

ANGLO-SAXON (*Second Paper*).

THURSDAY, MARCH 30TH :—2 TO 4 P.M.

Translation at sight :

A.

Tha burhleode tha urnon, and hi betyndon thære ceastre gatu and hi sohton thone halgan Andreas thæt hie hine genamon. Drihten Hælend hine tha æteowde tham haligan Andrea, and him to cwæth "Andrea aris and gecyth him thæt hie ongieton min mægen on the wesan." Se haliga Andreas tha aras on thæs folces gesihthe, and he cwæth, "Ic eom se Andreas the ge secath." Thæt folc tha arn and hie hine genamon and cwædon, "For thon thu us thus dydest we hit the forgyldath." And hie thohton hu hine acwellan meahton. Tha wæs se deofol in gangende, and cwæth to tham folce, "Gif eow swa licige uton sendan rap on his swyran and hine teon thurh thisse ceastre lanan (*streets*), and this uton we don oth thæt he swelte. And mid thi the he dead sie, uton we dælan his lichaman urum burhleodum." And tha eall thæt folc thæt gehierde, hit

him licode, and hrathe hie sendon rap on his sweoran, and hie hine tugon geond thære ceastre lanan. Mid thi the se eadiga Andreas wæs togen, his lichama wæs gemenged mid thære eorthan, swa thæt blod fleow ofer eorthan swa wæter.—*Legend of St. Andrew.*

B

Thæt is se drihten, se the death for us
gethrowode, theoden engla,
swylce he fæste feowertig daga
metod mancynnes thurh his mildsa sped.
Tha gewearth thone weregan the ær aworpen wæs
of heofonum, thæt he in helle gedeaf,
thæt he costode cyning alwihta,
brohte him to bearme brade stanas,
bæd him for hungre hlafas wyrcan :
" gif thu swa micle mihte habbe."

Christ and Satan.

GENERAL QUESTIONS.

1. Write a few notes on
   (*a*) the manuscript of *Béowulf.*
   (*b*) Byrhtnoth in the *Battle of Maldon.*
   (*c*) the sources of Cynewulf's Riddles.
2. Show the importance of a knowledge of Mœso-Gothic.
3. Give an instance of the various umlauts.
4. Illustrate and explain Verner's Law.
5. (*a*) Decline boc, hus, eage.
   (*b*) Decline thu, god.
   (*c*) Classify strong and weak verbs.
   (*d*) Conjugate in full drincan and habban.

EXAMINATION FOR HONOURS IN ENGLISH.

THIRD YEAR.

MILTON, *Areopagitica.* SIDNEY, *Apologie for Poetrie.*

FRIDAY, MARCH 31ST :—9 TO 12 A.M.

(*Write the answers to A and B in separate books.*)

A.

1. Write a line or two explanatory of :
   (*a*) Milton's literary activity in the year 1644.

(*b*) The persons who exercised censorship over books on Law, History, Heraldry, and, lastly, "all other books" (Decree of Star Chamber, 1637).

(*c*) The importation and selling of foreign books (Decree of Star Chamber, 1637.)

(*d*) The quiet abolition of licensing in 1694.

2. Show that the *Areopagitica* illustrates the influence of Greece on Milton.

3. State in very few words what Milton is illustrating when he writes :

(*a*) for which she is now fall'n from the Starres with Lucifer

(*b*) as vigorously productive as those fabulous Dragons teeth

(*c*) Margites : Morgante

(*d*) Plato recommended the reading of Aristophanes

(*e*) no Poet should so much as read to any privat man what he had writt'n

(*f*) the first that brought out of Ionia the scattered works of Homer

(*g*) the fescu of an Imprimatur

(*h*) Porphyrius and Proclus

(*i*) to finish his circuit in an English concordance

(*j*) complementing and ducking each to other with their shav'n reverences

(*k*) her Masters second coming

(*l*) Rise, Peter, kill and eat

(*m*) some cutting, some squaring the marole

(*u*) a better teacher than Scotus or Aquinas

(*o*) a passage to the people farre easier and shorter than an Indian voyage

(*p*) such an Adam as he is in the motions

(*q*) an eagle muing her mighty youth

(*r*) planting our faith one while in the old Convocation house and another while in the Chappell at Westminster

(*s*) the old Proteus—who spake oracles only when he was caught and bound

(*t*) He writing of Episcopacy .....left Ye his vote

4. Give the meaning (and nothing else) of the following words : *quadragesimal*, quell, conversing, uncorruptedness, ferular, ding, *subdichotomies*, *colours*, polite, painful. Say where two of the three italicized words occur.

5. Give an outline of Milton's statements regarding

(*a*) Licencing among the Romans.

(*b*) Licencing as "an undervaluing and vilifying of the whole nation."

B.

1. Give some account of the learning displayed by Sidney in the "Apologie for Poetrie."

2. Say what Sidney thinks about

(*a*) Poetry as the earliest of teachers.

(*b*) English poetry with respect to diction.

3. State in what connection the following occur :—

(1) He said soldiers were the noblest estate of mankind.

(2) I am *testis temporum, lux veritatis.*

(3) Climbing to the height of Seneca's style.

(4) Tragedy is tied to the laws of poesy, and not history.

(5) You shall suddenly grow *Herculea proles.*

(6) "Follow nature therein, and thou shalt not err."

(7) Not speaking table-talk fashion, or like men in a dream.

(8) The jolly commodity of being sick of the plague.

(9) They must not, as Horace saith, begin *ab ovo.*

(10) Thebes written in great letters upon an old door.

4. What was Sidney's opinion of the tragi-comedies of his own time?

5. Make short notes on Gyges' Ring, Sortes Virgilianæ, Atlantic Island, Percy and Douglas, Erasmus, eikastiké, Hospital of France, Mirror of Magistrates.

B.A. EXAMINATION FOR HONOURS IN ENGLISH.

WORDSWORTH, *Prelude.* CAMPBELL, *Pleasures of Hope.*

MONDAY, APRIL 3RD :—9 TO 12 A.M.

1. Give Wordsworth's description of the pursuits referred to in the following extracts :—

(*a*) With store of springes o'er my shoulder hung

(*b*) We hissed along the polished ice in games

(*c*) At evening when with pencil and smooth slate

2. What glimpses do we get of (*a*) Dame Tyson, (*b*) Wordsworth's mother, (*c*) Wordsworth's sister, (*d*) Coleridge?

3. Give an account of the ascent of Snowdon.

4. State briefly in what general connection each of the following extracts occurs:

(*a*) What one is,
Why may not millions be?

(*b*) Some unknown hand had carved the murderer's name

(*c*) Elsewhere will safety now be sought, and earth
March firmly towards righteousness and peace

(*d*) philosophic war
Led by philosophers

(*e*) their hands
Gathered the purple cups that round them lay

(*f*) And Negro Ladies in white muslin gowns

(*g*) a military glare
Of riotous men commissioned to expel
The blameless inmates

(*h*) For this unnatural growth the trainer blame,
Pity the tree

(*i*) I passed into a dream.
I saw before me stretched a boundless plain
Of sandy wilderness

(*j*) And in the meadows and the lower grounds
Was all the sweetness of a common dawn

(*k*) "Ha," quoth I, "pretty prisoner are you there"

(*l*) A boy, no better, with his rosy cheeks

(*m*) hair
Powdered like rimy trees

(*n*) a pledge
And surety of our earthly life, a light
Which we behold and feel we are alive

(*o*) There let the fiddle scream
And be ye happy

(*p*) From the vast city where I long had pined

5. Write your impressions of the *Prelude* within the limits of a page.

6. Notice allusions to English poets in the *Prelude*.

7. State in what general connection each of the following extracts occurs, and indicate or quote its context :

(*a*) Thrice the sad father tore thee from his heart

(*b*) Thus, while Elijah's burning wheels prepare

(*c*) The hardy Byron to his native shore

(*d*) There dwelt no joy in Eden's rosy bower

(*e*) He, with delirious laugh, the dagger hurled

(*f*) Wilt *thou*, sweet mourner, at my stone appear

(*g*) From planet whirl'd to planet more remote

(*h*) Leans o'er its humble gate and thinks the while

(*i*) Heaven's fiery horse, beneath his warrior form,
Paws the light clouds

(*j*) Thy seraph eye shall count the starry train

(*k*) Rise, fellow-men ! our country yet remains !

8. Give an outline of the following sections :

(*a*) Friend of the brave ! in peril's darkest hour

(*b*) Lo ! once in triumph, on his boundless plain,
The quiver'd chief of Congo loved to reign

(*c*) There shall he pause, with horrent brow, to rate
What millions died

(*d*) And well may Doubt, the mother of Dismay,
Pause at her martyr's tomb and read the lay

9. Sketch, within the limits of a page, Campbell's early life.

10 Give within the limits of a page your impressions of the *Pleasures of Hope*.

THIRD YEAR EXAMINATION FOR HONOURS IN ENGLISH.

MILTON : *Early Poems.*

TUESDAY, APRIL 4TH :—9 TO 12 A.M.

1. Make a brief note on (*a*) Charles Diodati, (*b*) Horton, (*c*) the tune *York*, (*d*) Thomas Young.

2. Name the poems from which the following extracts are taken, give as precisely as you can the contexts of any five of the extracts and an outline of the poem which supplies extract (*b*).

(*a*) Down he descended from his snow-soft chair

(*b*) No voice or hideous hum
Runs through the arched roof in words deceiving

(*c*) Rest that gives all men life, gave him his death

(*d*) No marchioness, but now a queen

(*e*) All is, if I have grace to use it so

(*f*) See, see the chariot and those rushing wheels
That whirled the prophet up at Chebar flood

(*g*) The liquid notes that close the eye of day

3. *L'Allegro* (*a*) Buxom, blithe; (*b*) wanton wiles; (*c*) windingbout; (*d*) uncouth cell; (*e*) In unreproved pleasures; (*f*) eating cares; (*g*) daisies pied; (*h*) chequer'd shade; (*i*) learned sock; (*j*) shadowy flail

Il Penseroso (*a*) old experience; (*b*) idle brain; (*c*) massy proof; (*d*) starr'd Ethiopqueen; (*e*) garish eye; (*f*) ev'n step; (*g*) shadows brown; (*h*) accustom'd oak; (*i*) Pelops' line; (*j*) thrice-great Hermes.

Give simply the meaning of the epithets, except in cases where they seem to demand a further note. Complete the lines of which they are parts, and give as precisely as you can the context of any five in (*a*) *L'Allegro*, (*b*) *Il Penseroso*.

4. Write, within the limits of a page, your impressions of *L'Allegro* and *Il Penseroso*.

5. State (*a*) the occasion of *Arcades* and (*b*) give an outline of the speech of the Genius of the wood.

6. Write on the development and construction of the Masque.

7. Refer the following lines to their speakers, and say in what connection each occurs:

(*a*) I saw them under a green mantling vine,
That crawls along the side of yonder hill

(*b*) Come, knit hands and beat the ground

(*c*) there does a sable cloud
Turn forth her silver lining on the night

(*d*) Love Virtue, she alone is free

(*e*) I will tell ye now
What never yet was heard in tale or song

(*f*) oft at eve
Visits the herds along the twilight meadows

(*g*) He that has light within his own clear breast
May sit i' th' centre

(*h*) I hate when vice can bolt her arguments

(*i*) For other arms and other weapons must
Be those that quell the might of hellish charms

(*j*) Beauty is Nature's brag

8. *Comus.* Can any mortal mixture of earth's mould
Breathe such divine enchanting ravishment?

Spirit. What, have you let the false enchanter scape?

Give an outline of the two speeches.

9. Write, within the limits of a page, your impressins of *Comus*.

THIRD YEAR EXAMINATION FOR HONOURS IN ENGLISH.

EARLY ENGLISH.

CHAUCER: *Parlement of Foules.*

TUESDAY, APRIL 11TH:—MORNING, 9 TO 12.

(*Write the answers to A and B in different books.*)

A.

1. Write a short paragraph on the history of English from the twelfth century to the close of the middle English period.

2. Translate:—

(*a*) Vor *g*if a maide treuthe ipli*g*t · to do an fole dede
Al one priueliche · withoute hire frendes rede,
Thulke vorewarde were uor no*g*t · & watloker it a*g*te her.

He esste ostage strong inou · & hii ne ssolde no*g*t wurne,
Ac toke him ostage god · at is owe wille,
So that *g*if eny a*g*en him was · huld him tho stille:

So stif mon he was in armes · in ssoldren, & in lende,
That vnnethe eni mon · mi*g*te is bowe bende,
That he wolde him-sulf vp is fot · ridinge wel vaste,
Li*g*tliche, & ssete also · mid bowe & arblaste.

'Out! what hath the calewe ido · what hath the calewe ido!
In the contrai me hurde wide · hou the schrewe gradde so.
As god the schrewe hadde ibeo · atom, ysnyt his nose,
He ne hi*g*ede no more thiderward · to hele him of the pose.

(*b*) And he stegh ouer Cherubin, and flegh thare ;
He flegh ouer fetheres of windes ware.
And he set mirkenes his lurking lang,
His telde to be in his vmgang ;
Mirke watres that ware of hewe,
In the kloudes of the skewe.

For-thi in birthes sal I to the schryue,
Lauerd, and to thi name salm sai mi liue.
Heles of his king mikeland,
And als swa mercy doand
To his crist, that es Dauid,
And to his sede til in werld thar wid.

———

(*c*) *G*ef hou trost to borewyng
The shal fayle mony thyng,
Loth when the ware ;
*G*ef thou haue thin oune won,
Thenne is thy treye ouergon,
Al wyth-oute care.
'Owen ys owen, & other mennes edneth ;'
Quoth Hendyng.

Make a brief note on Hendyng.

(*d*) Lenten ys come with loue to toune,
With blosmen & with briddes roune,
That all this blisse bryngeth ;
Dayes-e*g*es in this dales,
Notes suete of nyhtegales,
Vch foul song singeth.
The threstelcoc him threteth oo,
Away is huere wynter wo,
When woderoue springeth ;
This foules singeth ferly fele
Ant wlyteth on huere wynter wele,
That al the wode ryngeth.

(*e*) Ac he that *g*if so large water
The fend fram ous te reaue,
In node for to cristny men,
*G*ef alle men ileaue
At felle ;
Olepi me mot hym depe ine the water,
And eke the wordes telle.

And wanne hi cristneth ine the foungt,
The prestes so thries duppeth,
In the honur of the Trinité,
Ac gode geme kepeth
The ned,
On time a clothe that water ikest,
Ac ope the heuede te bede.

Ac water ikest an other loue
Cristneth the man alyue,
Ac hit his sikerest in the heeued
Ther beth the wittes fyue;
Wel, brother,
Ne non ne may icristned be,
Ar ge his boren of moder.

(*f*) Nixt than: ha zette strengthe. thet the vyendes / thet slegthe zent to zygge / to keste out: strengthe wythdroge. thet his uoule lostes wyth-droge: and wyth-zede. Rigtnesse uorzothe ssel zitte amydde / thet echen his ogen yefth.

Slegthe zayth. 'God wet ssolle we do. Nou brothren and zostren y-hyreth my red, and yueth youre. Byeth slege. an waketh ine youre bedes / porueynde guodes. nagt onlyche beuore gode: ac be-uore alle men.' Tholemodness zayth. 'Do we to worke godes nebsseft / ine ssrifte / and ine zalmes: glede we hym.

Theruore by ziker / uor eurych heth aseuele blyssen: ase he heth uelages. and aseuele blissen to echen: ase his ogene of alle, and theruore eureich more loueth wythoute comparisoun god: thet hym and othre made / thanne him zelue / and alle othre.

"Thou drede / guo out myd guode wylle. thole thane dom / thet rigt heth y-demd. be auenture the mygt eft by onderuonge. yef wylnynge of lyf wyth-oute ende / otherhuyl let of." The makyere zayth. Thus / thus / nou ssel eurich hys heuynesse / ssake a-way / uram drede / to the loue of the heuenelyche contraye him-zelue wende. Zuo by hit.

In what dialect is (*f*) written? Name the writer and the source of his work.

3. Compare the dialect of (*a*) with A. S. or W. S. in (*a*) five particulars which belong to stressed syllables, and (*b*), five which belong to inflection.

B

1. Write about a page on the following subject:—The characteristics of Chaucer's poetry as seen in the *Parlement of Foules*.

2. Mention the sources from which Chaucer took his Parle ment of Foules, and show where his borrowing is evident in the poem.

3. Translate the following and name the speakers :—

(*a*) For no fors is of lak of thy nature

(*b*) Ye come for to chese and fle youre wey
With makis as I prike yow with plesaunce.

(*c*) And who-so doth, ful foule hymself acloyeth
For offys vncommyttyd ofte anoyeth

(*d*) Ne neuere for no wo ne shal I lette
To seruyn hire, how fer so that she wende.

(*e*) Now, parde, fol, yet were it bet for the
Han holde thy pes than shewyd thy nysete.

(*f*) Soth is that I am euere vndyr youre yerde.

(*g*) Wel bordit, by myn hat!
That men shul louyn alwey causeles.

4. Give in your own words the substance of any *three* of the stanzas in which the following lines occur:—

(*a*) Tho was I war of Plesaunce anon ryght

(*b*) Thanne shewede he hym the litel erthe that here is

(*c*) The byldere ok, and ek the hardy assh

(*d*) And in a launde, vpon an hil of flouris

(*e*) The day gan failen and the derke nyght

(*f*) But fyrst were chosyn, foulis for to synge.

5. Give the meaning of the following words :—

Adamauntis, swow, carayne, fere, entrikyth, fon, demyn, entyrmes, hale, hente.

THIRD YEAR EXAMINATION FOR HONOURS IN ENGLISH.

ADDISON: *Papers on the Imagination and Paradise Lost;* DRYDEN: *Annus Mirabilis, Absalom and Achitophel, Preface to Fables.*

SATURDAY, APRIL 15TH :—9 TO 12 A. M

1. State very briefly how Addison treats the following matters;

(*a*) the pleasures of the imagination as compared with those of the sense and the understanding

(*b*) a confined landscape

(*c*) "that great modern discovery" in Natural Philosophy

(*d*) our trees rise in cones

(*e*) the difference of the impressions made by the Pantheon and a Gothic cathedral

(*f*) description as opposed to statuary

(*g*) the cause of the inferiority of Paradise Lost to the Æneid and the Iliad.

(*h*) the flower-bed of a poet

(*i*) a feature in which Shakspere excels all others

(*j*) Livy

(*k*) the allusions mads by scholars *or* by men of business.

2. Elucidate briefly:

(*a*) the preservation of the unity of the fable in Homer, Virgil and Milton

(*b*) the superiority of Satan to Ulyssus.

(*c*) *one* of the three methods of Aristotle by which the idiomatic style may be avoided

(*d*) the consistency of the description and the character of Belial.

(*e*) the golden scales: Uriel's mode of reaching the earth

(*f*) Homer, Claudian and Milton as describers of battles

(*g*) Nature and the fall of man

(*h*) Sin and Death compared with Greek tragedy

(*i*) Adam's Visions (Bk. XI.)

3. Without use of the preceding question, bring out in about a page what you regard to be strong points in Addison's critique of Milton's poem.

4. Give in a few words the substance of Dryden's remarks in the preface to *Annus Mirabilis* concerning:

(*a*) the epithet historical as applied to his poem

(*b*) the proper wit of an heroic or historical poem, positively and negatively considered

(*c*) his imitating Virgil. (Give, with precision, three examples.)

5. (*a*) Following Dryden's poem, give in your own words an account of the Fourth Day's battle. (*b*) In what way are St. Paul's and London Bridge referred to?

6. State the fact to which each of the following lines refers: and add a further note of explanation in regard to the first three :

(*a*) See how he feeds the Iberian with delays

(*b*) the Elean plains could boast no nobler fight

(*c*) There first the North's cold bosom spices bore

(*d*) And feels far off the trembling of her thread

7. Write within the limits of a page an account of the Popish Plot.

8. Describe Shimei *or* Corah.

9. Write on Dryden as a satirist.

10. In the preface to the Fables notice how Dryden writes regarding
(*a*) Spenser
(*b*) "Nof a single character has escaped him" (Chaucer)
(*c*) comparison between Boccaccio and Chaucer

THIRD YEAR EXAMINATION FOR HONOURS IN ENGLISH.

BURKE: *Reflections.* LESLIE STEPHEN: *English Thought in the Eighteenth Century.*

TUESDAY, APRIL 18TH:—9 TO 12 A.M.

(*Write the answers to A and B in different books.*)

A.

1. What has Burke to say about the old monarchical government of France?

2. Write a short essay on the financial policy of the National Assembly.

3. Explain :—

(*a*) Yet politics and the pulpit are terms that have little agreement.

(*b*) The nature of things requires that the army should never act but as an instrument.

(*c*) The example of the court of Chatelet.

(*d*) Why is the estate of the Duke de Rochefoucault more sacred than that of the Cardinal de Rochefoucault?

(*e*) Idolizing the memory of your Henry the Fourth.

(*f*) When they come to their third basis, that of *Contribution*, we find that they have more completely lost sight of their rights of men.

(*g*) Academies of the Palais Royal and the Jacobins.

(*h*) But is Cornwall better taken care of than Scotland?

(*i*) A very great proportion of the Assembly was composed of practitioners in the law.

(*j*) The *Justicia* of Aragon.

4. State who the following persons were and also in what connection they are spoken of in the *Reflections*: Mr. Bailly, Earl of Holland, Louis the Eleventh, Lord George Gordon, Abbé Morangis, M. de la Tour du Pin?

B.

1. Write on:—

(*a*) Burke's style.

(*b*) The nobility of Burke's moral nature.

2. Indicate the political character of Chatham.

3. Write on Samuel Johnson.

4. Contrast Priestley and Price.

5. Express *briefly* the views of the following writers on the subjects that stand over against their names:

Godwin: (*a*) history; (*b*) innate principles; (*c*) Fénélon and Fénélon's valet; (*d*) hanging.

Brown: (*a*) the professions; (*b*) commerce.

Rousseau: equality.

Tucker: America.

Delolme: the fundamental principle of the British Constitution

Burke: abstract reasoning.

Paine: Burke's sentimentalism about chivalry.

THIRD YEAR EXAMINATION FOR HONOURS IN ENGLISH.

SPENSER: *Shepheard's Calender; Faerie Queene*, Bk. I.

THURSDAY, APRIL 20TH:—9 TO 12 A.M.

1. Elucidate briefly: Robert Henryson; pastoral romance; pastoral drama; the self-given pastoral names of Virgil, Marot, Sannazaro, Spenser; cyclic pastoral.

2. What old and what new elements of pastoralism are to be found in the Shepheard's Calender? Illustrate from the poem.

3. Give the threefold division of the Æglogues given in the general argument, and a fairly full outline of one Æglogue of each kind.

4. Write on the meeting at Bryskett's.

5. What is said in the Prefatory Letter to the Faerie Queene concerning
   (*a*) the aim of the poem,
   (*b*) the method of the historiographer,
   (*c*) the two kinds of allegory.

6. Trace Una through the book, explaining the allegory when necessary.

7. Describe Lucifera's coach fully.

8. Where do the following lines occur:
   (*a*) Great God it planted in that blessed sted
   (*b*) There thirsty Tantalus hong by the chin
   (*c*) She was araied all in lilly white
   (*d*) And all that drink thereof do faint and feeble grow
   (*e*) His haughtie helmet horrid all with gold.

B.A. EXAMINATION FOR HONOURS IN ENGLISH.

ANGLO-SAXON (*First Paper*).

THURSDAY, MARCH 30TH:—9 TO 12 A.M.

Beowulf and the *Fight at Finnsburg*.

A

1. Translate, with notes on constructions, readings and forms:
   Hwilum hie geheton at hærg-trafum

wig-weorthunga, wordum bædon,
thæt him gast-bona geoce gefremede
with theod-threaum. Swylc wæs theaw hyra,
hæthenra hyht ; helle gemundon
in mod-sefan, metod hie ne cuthon,
dæda demend, ne wiston hie drihten god,
ne hie huru heofena helm herian ne cuthon,
wuldres waldend. Wa bith thæm the sceal
thurh slithne nith sawle bescufan
in fyres fathm, frofre ne wenan,
wihte gewendan ; wel bith thæm the mot
after death-dæge drihten secean
and to fæder fæthmum freotho wilnian.

Nolde, eorla hleo ænige thinga
thone cwealm-cuman cwicne forlætan,
ne his lif-dagas leoda ænigum
nytte tealde. Thær genehost brægd
eorl Beowulfes ealde lafe,
wolde frea-drihtnes feorh ealgian
mæres theodnes, thær hie meahton swa ;
hie thæt ne wiston, tha hie gewin drugon,
heard-hicgende hilde-mecgas,
and on healfa gehwone heawan thohton,
sawle secan, thæt thone syn-scathan
ænig ofer eorthan irenna cyst,
guth-billa nan gretan nolde ;
ac he sige-wæpnum forsworen hæfde,
ecga gehwylcre.

Het tha Hildeburh at Hnafes ade
hire selfre sunu sweolothe befæstan,
ban-fatu bærnan and on bæl don.
Earme on eaxle ides gnornode,
geomrode giddum ; guth-rinc astah.
Wand to wolcnum wal-fyra mæst,
hlynode for hlawe ; hafelan multon,
ben-geato burston, thonne blod ætspranc
lath-bite lices. Lig ealle forswealg,
gæsta gifrost, thara the thær guth fornam
bega folces ; wæs hira blæd scacen

B.

Translate :

Bold wæs betlie, brego-rof cyning,
hea (on) healle, Hygd swithe geong,

wis, wel-thungen, theah the wintra lyt
under burh-locan gebiden hæbbe
Hærethes dohtor: nas hio hnah swa theah
ne to gneath gifa Geata leodum,
mathm-gestreona. Mod Thrygo wæg,
fremu folces cwen, firen ondrysne:
nænig thæt dorste deor genethan
swæsra gesitha, nefne sin-frea,
thæt hire an dæges eagum starede;
ac him wæl-bende weotode tealde,
hand-gewrithene: hrathe seoththan wæs
æfter mund-gripe mece gethinged,
thæt hit sceathen-mæl scyran moste,
cwealm-bealu cythan.

Symble bith gemyndgad morna gehwylce
eaforan ellor-sith; othres ne gymeth
to gebidanne burgum on innan
yrfe-weardes, thonne se an hafath
thurh deathes nyd dæda gefondad.
Gesyhth sorh-cearig on his suna bure
win-sele westne, wind-gereste,
reote berofene; ridend swefath,
hæleth in hothman; nis thær hearpan sweg,
gomen in geardum, swylce thær iu wæron.

Him big stodan bunan and orcas,
discas lagon and dyre swyrd,
omige thurh-etone, swa hie with eorthan fæthm
thusend wintra thær eardodon:
thonne wæs thæt yrfe eacen-cræftig,
iu-monna gold galdre bewunden,
thæt tham hring-sele hrinan ne moste
gumena ænig nefne god sylfa,
sigora soth-cyning, sealde tham the he wolde
(he is manna gehyld) hord openian,
efne swa hwylcum manna, swa him gemet thuhte.

"Ne this ne dagath eastan, ne her draca ne fleogeth,
ne her thisse healle hornas ne byrnath,
ac fer forth berath, fugelas singath,

gylleth græg-hama, guth-wudu hlynneth,
scyld scefte oncwyth Nu scyneth thes mona
wathol under wolcnum; nu arisath wea-dæda,
the thisne folces nith fremman willath.

Ac onwacnigeath nu, wigend mine,
hebbath eowre handa, hicgeath on ellen.
winnath on orde, wesath on mode!"

C.

1. Write on Sarrazin's view that *Beowulf* is to be ascribed to Cynewulf. How does Sievers meet it?

2. Geatas = Jutes: Write at length on this theory.

3. Make notes on

leode gelæsten (24)
athum-swerian (84)
earfoth-thrage (283)
regn-hearde (326)
gif-sceattas (378)
hild (452)
Welandes geweorc (455)
ealu-scerwen (770)
stod on stapole (927)
icge gold (1108)
Brosinga mene (1200).

B.A. EXAMINATION FOR HONOURS IN ENGLISH.

SHELLEY, *Adonais*. MILTON, *Lycidas*. MATTHEW ARNOLD, *Thyrsis*.

FRIDAY, MARCH 31ST:—9 TO 12 A. M.

1. Explain:—

(*a*) the third among the sons of light.

(*b*) the Pilgrim of Eternity.

(*c*) the sweetest lyrist of her saddest wrong.

(*d*) Athwart what brow is that dark mantle thrown?

(*e*) his solemn agony had not Yet faded from him.

(*f*) a spirit without spot.

(*g*) one keen pyramid.

2. O, weep for Adonais!—The quick Dreams (IX).
And one with trembling hands clasps his cold head (X).
One from a lucid urn of starry deed (XI).
Another splendour on his mouth alit (XII).
And others came—Desires and Adorations (XIII).

Give an outline of the above stanzas.

3. Write a short essay on the course of thought in *Adonais*, and in the margin jot down, with exact reference, corresponding thoughts in *Lycidas* and *In Memoriam*.

4. State and refute Samuel Johnson's adverse criticisms of *Lycidas*.

5. Refer the following extracts to their places in the poem, explain them when necessary, and give as precisely as you can their contexts.

(*a*) the great Vision of the guarded mount
(*b*) the Genius of the shore
(*c*) Inwrought with figures dim
(*d*) sisters of the sacred well
(*e*) the shaggy top of Mona high
(*f*) sage Hippotades
(*g*) To sport with Amaryllis
(*h*) scrannel pipes
(*i*) Weep no more, woeful shepherds, weep no more
(*j*) the stormy Hebrides

6. (*a*) Write on pastoralism in Lycidas.
(*b*) Quote a few lines of the passages beginning with:

How well could I have spared for thee, young swain
Return, Alpheus; the dread voice is past
For we were nurst upon the self-same hill

7. "The crude and naked sorrow is veiled and chastened with soft shadows and sounds of a 'land that is very far off'—the verse remembers and retains a perfume and an echo of Grecian flutes and flowers." *Swinburne*. Substantiate this criticism of *Thyrsis*.

8. Whence did Matthew Arnold derive the story of the "Scholar Gipsy?" What is it?

9. Contrast *Thyrsis* with *Adonais* and *In Memoriam*.

10. Give the context in your own words or in the poet's, of:
(*a*) In the two Hinkseys nothing keeps the same
(*b*) He went; his piping took a troubled sound
(*c*) Too quick despairer, wherefore wilt thou go?
(*d*) Where is the girl who by the boatman's door
(*e*) That lone, sky-pointing tree

11. Write on Arthur Hugh Clough.

B.A. EXAMINATION FOR HONOURS IN ENGLISH.

SHAKSPERE: *Love's Labour's Lost; A Midsummer Night's Dream; Hamlet: The Tempest.*

SATURDAY, APRIL 1ST:—9 A.M.

1. State the two phases of the Main plot of L. L. L., the two Character-Groups and the two Sub-Actions of the underplot, and the enveloping Motive Action.

2 Write on Guevara and also on contemporary personal satire in L.L.L.

3. Refer the following lines to their speakers, give as precisely as you can their contexts and say where they occur:

(*a*) Thus will I save my credit in the shoot

(*b*) A man in all the world's new fashion planted

(*c*) Had he been Adam, he had tempted Eve

(*d*) Love whose month is ever May

(*e*) Navarre shall be the wonder of the world

4. Show that Moth, Costard and Jaquenetta are foils to Armado, and Sir Nathaniel and Dull to Holofernes.

5. Explain passages in the *Dream* which seem pointedly contemporaneous.

6. Explain and refer to their places in the play: a roasted crab; most brisky juvenal; yon fiery O's; for, you see, it is already in snuff; You minimus.

7. Illustrate tone-relief in the *Dream.*

8. Give an outline of the opening scene down to the exit of Theseus; also of the quarrel of Oberon and Titania.

9. Give an outline of

(*a*) What passes between Hamlet, Rosencrantz and Guilderstern (Act II, Sc. II).

(*b*) Polonius's farewell speech to Laertes.

(*c*) *Queen.* There is a willow grows aslant a stream.

10. Say where the following extracts occur, name the speakers and explain the meaning of the words in italics:

(*a*) an *aery* of children little *cyases*

(*b*) And no soil nor *cautel* doth besmirch
The virtue of his will

(*c*) He galls his *kibe*

(*d*) On fortune's cap we are not the very button

(*e*) *Unhousel'd, disappointed, unanealed*

11. Notice the relation of the first quarto of Hamlet to the play.

12. In treating the supernatural a dramatist may (*a*) derationalise or (*b*) rationalise: explain the terms and apply to the Tempest.

13. Write on Nature in the Tempest.

14. Illustrate from the Tempest:

(*a*) the literal use of words

(*b*) the interchange of parts of speech

(*c*) peculiarities of phrasing and of syntax as compared with modern English

15. Explain what is meant by Amphibious Section, and scan:

(*a*) To think o' the teen that I have turned you to

(*b*) Of officer and office, set all hearts i' the state

(*c*) And him he played it for, he needs will be

(*d*) He thinks me now incapable; confederates

16, State in what connection the following extracts occur and name the speakers:

(*a*) .....Our little life
Is rounded with a sleep.

(*b*) Letters should not be known.

(*c*) ...lest too light winning
Make the prize light.

(*d*) His word is more than the miraculous harp.

(*e*) This ancient morsel, this Sir Prudence—

(*f*) Misery acquaints a man with strange bed-fellows.

(*g*) I swam, ere I could recover the shore, five and thirty leagues off and on.

(*h*) .....the isle is full of noises
Sounds and sweet airs—

(*i*) You are three men of sin—

(*j*) O, rejoice
Beyond a common joy, and set it down
With gold on lasting pillars.

(*k*) He receives comfort like cold porridge.

Make a note on (*b*) and (*d*).

B.A. EXAMINATION FOR HONOURS IN ENGLISH.

MŒSO-GOTHIC AND EARLY ENGLISH.

MONDAY, APRIL 3RD, 1899:—9 TO 12 A.M.

MŒSO-GOTHIC.

1. Translate and explain the construction of

(*a*) swinthoza mis

(*b*) andanahtja than waurthanamma

(*c*) gagg thuk silban ataugjan gudjin

(*d*) thagkjandans sis

(*e*) thata frawaurhte

(*f*) jah uta standandona insandidedun du imma

(*g*) izwis atgiban ist kunnan

(*h*) bi thata anthar lustjus

(*i*) nih allis is hwa fulginis

(*j*) niu kara thuk thizei

(*k*) ohtedun sis agis mikil

(*l*) aftumist habaith

2. Treat the verbs andbindan, fralet, anabiudath, usstandands under such of the following heads as apply: Gothic ablaut, O.H.G. or M.H.G. or N.H.G. correspondent, Germanic base (or bases), Indo-Germanic root (or roots), classical cognates, derived causal.

3. Take the A.S. words earnian, lædan, lytel, geliefan, rap, stefn, læran, bætan, ham, and explain or examine their forms by the light of Mœso-Gothic; also the Modern English *grasp*.

4. Translate:—

(*a*) jah suns kwethun *imma* bi *ija*

(*b*) *hafanana* fram fidworim

(*c*) ni thaurbun *swinthai* lekeis ak thai ubilaba *habandans;* ni kwam lathon uswaurhtans ak frawaurhtans

(*d*) Aththan atgaggand *dagos* than afrimada af im sa bruthfaths

(*e*) ibai afnimai *fullon* af thamma sa nuija thamma fairnjin

(*f*) *sunjus* theihwons

(*g*) gateih im hwan filu *thus frauja* gatawida jah gaarmaida thuk

(*h*) unte kwath thatei jabai wastom is atteka, ganisa

5. Decline the words in the preceding question which are italicized; in the case of adjectives and past participles give both forms (strong and weak) and all genders; in the case of present participles all genders; in the case of personal pronouns all numbers.

6. Conjugate afniman throughout, also lathon. Give the passive (ind. and subj.) of haitan, the present and past subjunctive of wisan, and compare gods, mikils, leitils.

EARLY ENGLISH.

1. Translate:—

(*a*) Yf that tre war tite pulled oute
At a titte, with al the rotes oboute,
The rotes suld than rayse thar-with
Ilk a vayn & ilk a synoghe and lith

(*b*) For, or thai wened, war thai mett
With men that sone thaire laykes lett.
Su*m* was knokked on the heuyd,
That the body thare bileuid;
Sum lay stareand on the sternes,
And sum lay, knoked out thaire hernes;

Both alblast and many a bow
War redy railed opon a row,
And ful frek forto fight.

(*c*) clothed ful komly · for ani kud kinges sone,
In gode clothes of gold · a-grethed ful riche,
with perrey & pellure · pertelyche to the rizttes.

the emp*e*rowr entred in a wey · euene to attele
to haue bruttenet that bor · at the abaie seththen;
but missely marked he is way · & so manly he rides,
that all his wies were went · ne wist he neue*r* whider;

so fair a sizt of seg · ne sawe he neuer are,
of lere ne of lykame · lik him nas none,
ne of so sad a semblant · that eue*r* he say with eizyen.

'bi stille, barn,' quath themp*e*rour · 'blinne of thi sorwe,
For y hope that hal thi kin · hastely here-after,
zif thou wolt zeue the to gode · swiche grace may the falle,
'that alle thi frendes tordedes · faire schalstow quite.'

(*d*) The ende of alle-kynez flesch · that on vrthe meuez
Is fallen forth-wyth my face · & forth*er* hit I thenk;

With her vn-worthelych werk · me wlatez with-inne,
The gore ther-of me hatz greued · & the glette nwyed ;
I schal strenkle my distresse · & stryе al to-geepr,
Bothe ledez and londe · & alle that lyf habbez.

Thenne mourkne in the mudde · most ful nede
Alle that spyrakle in-sprauc · no sprawlyng awayled,
Saue the hathel vnder hach · & his here straunge,
Noe, that ofte neuened · the name of oure lorde,
Hym azt sum in that ark · as athel god lyked,
Ther alle ledez in lome · lenged druye.

The rauen raykez hym forth · that reches ful lyttel
How alle fodez ther fare · ellez he fynde mete ;
Bot the burne bynne borde · that bod to hys come,
Banned hym ful bytterly · with bestes alle samen

Rydelles wern tho grete rowtes · of renkkes with-inne,
When thay wern war of the wrake · that no wyze achaped ;
Such a zomerly zarm · of zellyng ther rysed,
Ther-of clatered the cloudes · that kryst myzt haf rawthe

(e) Iudas he Iapede · with the Iewes seluer,
And on an Ellerne treo . hongede him after.
He is a lettere of loue · and lyzeth hem alle
That trusteth in heor tresour · ther no truthe is Inne.'

Thenne I drouz me a-mong this drapers · my Donet to leorne,
To drawe the lyste wel along · the lengore hit semede ;
Among this Riche Rayes · lernde I a Lessun,
Brochede hem with a pak-neelde · & pletede hem togedere,
Putte hem in a pressour · & pinnede hem ther-Inne
Til ten zerdes other twelue · tolden out threttene.

'I haue no peny,' quod pers · ' Poletes to bugge,
Nouther gees ne grys · bote twey grene cheeses,
And a fewe Cruddes and Craym · and a therf Cake,
And a lof of Benes and Bren · I-Bake for my Children.

Bot I haf herd oftsiss say,
That quha endlang a vattir ay
Wald vayd a bow-draucht, he suld ger
Bath the sleuthhund & the ledar
Tyne the sleuth men gert him ta ;
Pruf we gif it will now do swa.

For thai var fayis to the kyng,
And thoucht to cum in-to scowkyng,
And duell with hym quhill that thai saw
Thar tym, and bryng hym than of daw.

2. Give some account of the myth of the *werwolf*.

3. Describe the four greatest wonders of Britain as given in John of Trevisa's translation of Higden. When did English take the place of French in English grammar schools?

4. Make notes on Hermengyld, Bacharie, Mahomet and the hermit.

B.A. EXAMINATION FOR HONOURS IN ENGLISH AND HISTORY.

MORE: *Utopia*. MATTHEW ARNOLD: *Essays in Criticism* (*Second Series*).

SATURDAY, APRIL 8TH, 1899:—9 TO 12 A.M.

(*Write the answers to A and B in different books.*)

A.

1. Give the reasons set forth by Hythlodaye for the number of thieves in England, and his suggestions for the proper punishment of theft.

2. Write a short essay on religion among the Utopians.

3. Make brief notes on the Achoriens, counterfeit wars, Cardinal Morton, the Zapoletes, Tranibore.

4. Say what you know about

(*a*) The manner in which the Utopians regarded wealth.

(*b*) The way in which they treated incurable disease.

(*c*) Their way of regarding leagues.

5. Give the meanings of the following words in Utopia:

Dorr, aglet, brabbling, javel, pilled, jet, covein, in aunters, cautel, overthwart, ure, hapt.

B

1. For what purposes and in what terms does Arnold refer to;

(*a*) The *Chanson de Roland*;

(*b*) Christian of Troyes;

(*c*) *The Jolly Beggars*;

(*d*) "In la sua volontade è nostra pace"

(*e*) "Sit Latium, sint Albani per secula reges!"

(*f*) Gray's criticism of Isocrates and Froissart ?

2. What does Arnold say concerning :

(*a*) The virile side of Keats's character ;

(*b*) Wordsworth's philosophy ?

3. (*a*) What ideas does Arnold develop from the juxtaposition of Leopardi, Byron and Wordsworth ?

(*b*) Show in detail how the following line of Shelley opens up one side of the poet's own character :

"I am the friend of the unfriended poor."

4. (*a*) How does Arnold compare Amiel and Senancour ?

(*b*) How in his essay on Tolstoi does he generalize concerning the Slavonic character ?

B.A. EXAMINATION FOR HONOURS IN ENGLISH.

POPE : *Essay on Criticism ; Essay on Man.*

MONDAY, APRIL 10TH :—9 TO 12 A.M.

1. Show that the *Essay on Criticism* is typical of its period. Quote, independently of question 2, five lines in different parts of the poem which have become proverbial, and say in what connection each occurs.

2. Refer the following lines to their places and give their contexts as precisely as you can :

(*a*) One science only will one genius fit

(*b*) We think our fathers fools, so wise we grow

(*c*) Led by the light of the Mæonian star

(*d*) And rhyme with all the rage of Impotence

(*e*) To err is human, to forgive divine

3. (*a*) Did Virgil copy Homer ?

(*b*) Why are critics like apothecaries ?

(*c*) What should be observed when rules are broken ?

(*d*) To what is language secondary ?

(*e*) Should a critic praise ancient or modern literature ?

(*f*) On what should ridicule be cast ?

4. Give the sketch of the true critic which opens with

But where's the man who counsel can bestow—

5. Cite eight allusions to English writers and critics in the *Essay on Criticism*, and mention a work of each.

6. Indicate the general plan of the *Essay on Man*.

7. Show direct acquaintance with Bolingbroke's "Fragments."

8. State the subject with which Pope is dealing when he makes reference to: (*a*) Borgia, (*b*) Calvin, (*c*) Newton, (*d*) Greenland, (*e*) Cromwell, (*f*) the Nautilus, (*g*) Sidney, (*h*) Ætna, (*i*) the Howards.
Give contexts as precisely as you can.

9. Write a short passage taken from Epistle II. or Epistle IV., and from it illustrate the strength and the weakness of the species of poetry to which the Essay on Man belongs.

10. Take an important passage of your own choosing and give its substance in your own words.

B.A. EXAMINATION FOR HONOURS IN ENGLISH.

TENNYSON: *In Memoriam;* BROWNING, *Christmas-Eve and Easter-Day.*

SATURDAY, APRIL 15TH:—MORNING, 9 TO 12.

1. Show knowledge of Petrarch's *Sonnets and Canzoni to Laura in Death.*

2. State a cardinal thought in the development of *In Memoriam* which is connected with each of the following extracts:

(*a*) I scarce could brook the strain and stir
That makes the barren branches loud

(*b*) Her faith through form is pure as thine

(*c*) Unconscious of the sliding hour

(*d*) So rounds he to a separate mind

(*e*) And faintly trust the larger hope

(*f*) Be sometimes lovely like a bride

(*g*) Unwatched the garden bough shall sway

(*h*) "And wilt thou leave us now behind?"

(*i*) A higher hand must make her mild

(*j*) No longer half akin to brute

Give the contexts as precisely as you can.

3. Notice excuses (*a*) personal to the poet, (*b*) regarding the limited sphere and capabilities of poetry.

4. Give an outline of the following sections:

(*a* By night we lingered on the lawn (XCV.)

(*b*) Had babbled "Uncle" on my knee (in the body of LXXXIV).

5. Write a short essay treating *In Memoriam* from some æsthetic point of view and quote briefly in illustration of your statements.

6. Develop the themes with which the following extracts from *Christmas-Eve and Easter-Day* are connected:

(*a*) Man's hand, first formed to carry
A few pounds' weight when taught to marry
Its strength with an engine's, lifts a mountain

(*b*) Oh, love of those first Christian days!
Fanned so soon into a blaze
From the spark preserved by the trampled sect

(*c*) Shall I take on me to change his tasks,
And dare, dispatched to a river-head
For a simple draught of the element,
Neglect the thing for which he sent?....

(*d*) make us learn
What I began with, and, I wis,
End, having proved how hard it is
To be a Christian!

(*e*) One morn, the Arab staggers blind
O'er a new tract of death, calcined
To ashes.

7. Give an outline of *Easter-Day* from the pronouncement of doom to the end.

8. Describe the flock of Zion chapel.

9. Write a criticism of *Christmas Eve and Easter Day* as a poem.

B.A. EXAMINATIONS FOR HONOURS IN ENGLISH AND HISTORY.

TENNYSON: *Idylls of the King.*

THURSDAY, APRIL 13TH:—9 TO 12 A.M.

1. In the *Coming of Arthur* point out three particulars, apart from allegorical additions, for which Tennyson is indebted to his sources but which he has modified to suit his central conception.

2. (*a*) How is the talk of the kitchen-knaves in *Gareth and Lynette* described?

(*b*) Give a full comparison of the knights in Malory and Tennyson.

3. Give an outline of the story of *Geraint and Enid.*

4. Describe Pellam's character and what takes place in his castle.

5. Give Merlin's story of the Eastern king.

6. Describe the scene between Lancelot and Guinevere at the oriel.

7. Point out the allegory in the *Holy Grail.*
How does Tennyson's poem differ from Wolfram von Eschenbach's?

8. Use the series of Idylls from *Pelleas and Ettarre* onwards to illustrate the decadence of Arthur's court.

9. Say in what Idylls the following extracts are found, and give their connections as precisely as you can:

(*a*) Like sparkles in the stone Avanturine

(*b*) There will I hide thee till my life shall end,
There hold thee with my life against the world

(*c*) My malice is no deeper than a moat,
No stronger than a wall

(*d*) fair with orchard lawns
And bowery hollows crowned with summer sea

(*e*) Dead for one heifer

(*f*) A lodge of intertwisted beechen-boughs
Furze-crammed and bracken-rooft

(*g*) And then did Envy call me Devil's son

(*h*) "Yea, but thy name?" "I have many names," he cried

(*i*) Red as the rising sun with heathen blood

(*j*) only the rounded moon

Thro' the tall oriel on the rolling sea.

10. Explain the following, and name the titles of the pieces to which they belong:

(*a*) "loose the bond and go.'

Is this the tone of empire?

(*b*) Arthur's harp

(*c*) Commingled with the gloom of imminent war

(*d*) I will be deafer than the blue-eyed cat

(*e*) To plunge old Merlin in the Arabian sea

(*f*) Crack'd basilisks and splinter'd cockatrices

(*g*) Led on the gray-hair'd wisdom of the East

(*h*) Men weed the white horse on the Berkshire hills

(*i*) That seem a sword beneath a belt of three lines of stars

(*j*) Diet and seeling, jesses, leash and lure.

HONOUR EXAMINATIONS, 1899.

THIRD AND FOURTH YEARS.

MEDIAEVAL HISTORY.

WEDNESDAY, APRIL 17TH:— 9 TO 12 A.M.

1. Treat the following subjects:—

(*a*) Arian heresy within the Roman Empire.

(*b*) The conversion of the German races to Christianity.

(*c*) The early status of the papacy (prior to the age of Gregory the Great).

2. (*a*) What social and political changes did the Germans undergo between the composition of the *Germania* and the Lombard invasion of Italy?

(*b*) Explain and illustrate the attitude of the Germans towards Rome.

3. Estimate the historical importance of :—

(*a*) Theodosius.

(*b*) Aëtius.

(*c*) Pippin of Heristal.

4. Beginning with the death of Valentinian III., examine the tendencies which culminated in 476.

5. Contrast Frankish society under the Merovingians of the 6th Century with Ostrogothic society under Theodoric.

6. Trace the territorial expansion of Islam to 732, dwelling upon local causes and circumstances wherever possible.

7. Write on the following topics, shaping your answers with a view to points rather than phrases.

(*a*) German relations with the Roman Empire prior to the Visigothic settlement in Moesia.

(*b*) The Empress Theodora.

(*c*) Papal adversaries in the first half of the 8th century.

(*d*) Mohammedan beliefs and duties.

(*e*) Mediaeval reverence for Rome.

HONOUR EXAMINATIONS, 1899.

THIRD AND FOURTH YEARS.

MEDIAEVAL HISTORY.

FRIDAY, APRIL 19 :— 2 TO 5 P.M.

1. (*a*) Detail the character of Charlemagne's wars against the Saxons, and give some idea of their general import.

(*b*) Describe Charlemagne's administrative machinery, explaining the functions of his several officials and commenting upon the Capitularies.

2. (*a*) Recite the leading events of the years 841-843, and point out their lasting results.

(*b*) Examine the origin of the Capetian family, and its establishment on the throne of France.

3. Considering the Mediaeval Church merely as a body which exercised great power, account for the degree ofits ascendency.

4. Give as long a list as you can of the Italian expeditions which were undertaken by German sovereigns, 95[illegible]-1183, and comment upon each one mentioned.

5. Discuss :—

(*a*) The marriage difficulties of Lothar II., and show what light they throw on the ideas of the time.

(*b*) The principles of the Investiture Controversy.

6. Describe : —

(*a*) The reforms of St. Louis.

(*b*) The position of the Holy Roman Empire after the Interregnum.

7. Write briefly but categorically on :—

(*a*) The Duchy of Saxony in the 10th century.

(*b*) The battle of Civitella.

(*c*) The intellectual position of Abelard.

(*d*) Frederick II. and Innocent III.

(*e*) The last of the Hohenstaufen.

FRENCH.

EXAMENS DE FIN D'ANNÉE.

LETTRES—PREMIÈRE ANNÉE.

JEUDI, 13 AVRIL 1899.

1. Que signifient les noms suivants selon qu'ils sont masculins ou féminins :—

Crêpe, faux, mousse, manche, office, pendule, somme, souris, voile.

2. Discuter le subjonctif philosophiquement avec des exemples raisonnés.

3. (*a*) Pourquoi le vers français est-il syllabique et non pas métrique? (*b*) Qu'appelle-t-on consonne d'appui? (*c*) Citer quelques rimes riches.

4. Expliquer brièvement ce que c'est que (*a*) la langue d'oc, (*b*) la langue d'oïl, et établir le rapport de ces idiômes avec le latin.

ou

Ecrire environ 150 mots sur un des sujets suivants :

(*a*) La Chasse aux loups en Russie (A. Dumas.)

(*b*) La Mort de Porthos (A. Dumas.)

(*c*) Silvestre Bonnard et la Fée (Anatole France.)

5. Apprécier l'œuvre de deux des écrivains suivants: V. Hugo Béranger, A. de Vigny, Lamartine, Renan, A. Dumas, père, Balzac.

6. Développer le canevas suivant :

— Le père de Washington avait un arbuste précieux auquel il tenait beaucoup. Washington, enfant, frappe l'arbuste avec sa hachette... Terrible colère du père..."Si je connaissais le coupable, je le tuerais!... C'est moi... " Cette courageuse franchise touche le père...Ce qu'il dit à son fils...

EXAMENS DE FIN D'ANNÉE.

LETTRES—II ANNÉE.

INTERMÉDIAIRE.

JEUDI 13 AVRIL.

I. Comment forme-t-on

(1) le pluriel des noms composés,

(2) l'adverbe? Donner des exemples raisonnés.

II. Quelle est la différence dans le *sens* et dans l'*emploi* entre (*a*) davantage et plus, (*b*) pire et pis, (*c*) tout à coup et tout d'un coup, (*d*) de suite et tout de suite ?

III. Dire les qualités qui distinguent le style de Th. Gautier et apprécier succinctement son œuvre.

IV. Ecrire l'histoire de Quasimodo (300 mots environ).

V. Reproduire en abrégé la Légende de St. Julien l'Hospitalier et dire quelques mots sur l'œuvre et le style de Flaubert.

VI. Définir la renaissance et considérer ce mouvement aux points de vue (*a*) des causes, (*b*) des effets dans la littérature française.

ou

Nommer les principaux écrivains du XVI siècle et leurs ouvrages et écrire une courte appréciation de l'œuvre de l'un d'eux.

VII. Parmi les livres (anglais ou français) que vous avez lus quel est celui que vous préférez ? Dites pourquoi, et faites-en une courte analyse.

EXAMENS DE FIN D'ANNÉE.

LETTRES II ANNÉE.

(INTERMÉDIAIRE).

JEUDI, 13 AVRIL.

A.

I. Comment forme-t-on

(1) le pluriel des noms composés,

(2) l'adverbe ? Donner des exemples raisonnés.

II. Définir le Romantisme et indiquer brièvement les traits caractéristiques de ce mouvement.

III. Dire les qualités qui distinguent le style de Théophile Gautier et apprécier succinctement son œuvre.

IV. Ecrire l'histoire de Quasimodo (300 mots environ).

V. Esquisser à grands traits

(1) La personnalité de Louis XI

(2) la destruction de l'Armée de Pharaon.

VI. Reproduire par écrit l'anecdote suivante :
(Au lieu de cette reproduction MM. les examinateurs des collèges affiliés voudront bien faire une dictée d'environ 100 mots prise dans Corinne.)

N.B.—Répondre en français exclusivement.

B.

Traduire les passages suivants :

I. The main stream of the Aryan nations has always flowed towards the north-west. No historian can tell us by what impulse these adventurous Nomads were driven on through Asia towards the isles and shores of Europe. The first start of this world-wide migration belongs to a period far beyond the reach of documentary history; to times when the soil of Europe had not been trodden by either Celts, Germans, Slavonians, Romans, or Greeks. But whatever it was, the impulse was as irresistible as the spell which, in our own times, sends the Celtic tribes towards the prairies or the regions of gold across the Atlantic. It requires a strong will, or a great amount of inertness, to be able to withstand the impetus of such national, or rather ethnical movements. Few will stay behind when all are going. But to let one's friends depart, and then to set out ourselves, to take a road which, lead where it may, can never lead us to oin those again who speak our language and worship our gods—is a course which only men of strong individuality and great self-dependence are capable of pursuing. It was the course adopted by the southern branch of the Aryan family, the Brahmanic Aryas of India and the Zoroastrians of Iran.

II. Au moyen âge, quand un édifice était complet, il y en avait presque autant dans la terre que dehors. A moins d'être bâtis sur pilotis, comme Notre Dame, un palais, une forteresse, une église avaient toujours un double fond. Dans les cathédrales, c'était en quelque sorte une autre cathédrale souterraine, basse, obscure, mystérieuse, aveugle et muette, sous la nef supérieure qui regorgait de lumière et retentissait d'orgues et de cloches jour et nuit; quelquefois c'était un sépulcre. Dans les palais, dans les bastilles c'était une prison, quelquefois aussi un sépulcre, quelquefois les deux ensemble. Ces puissantes bâtisses, dont nous avons expliqué ailleurs le mode de formation et de végétation, n'avaient pas simplement des fondations, mais, pour ainsi dire, des racines qui s'allaient ramifiant dans le sol en chambres, en galeries, en escaliers, comme la construction d'en haut. Ainsi églises, palais, bastilles, avaient de la terre à mi-corps. Les caves d'un édifice étaient un autre édifice où l'on descendait au lieu de monter, et qui appliquait ses étages souterrains sous le monceau d'étages extérieurs du monument, comme ces forêts et ces montagnes qui se renversent dans l'eau miroitante d'un lac au-dessous des forêts et des montagnes du bord.

N.B.—Dater en toutes lettres.

EXAMENS DE FIN D'ANNÉE.

LETTRES—TROISIÈME ANNÉE.

LUNDI, 17 AVRIL 1899.

A

1. Comment expliquez-vous le grand développement que prit la littérature française au XVII. siècle?

ou

Montrez que les personnages dans le Misanthrope sont traités selon les lois de la justice distributive.

2. Apprécier l'œuvre de Bossuet comme orateur et comme historien.

3. Exposer la construction d'une tragédie en discutant spécialement les unités.

4. Faire l'analyse des principaux caractères du Tartuffe.

5. Comparer Voltaire et Rousseau.

6. Décrire l'origine et le but de l'Académie Française ou
Discuter les Provinciales aux points de vue polémique, religieux et littéraire.

7. Indiquer l'origine et l'application des expressions suivantes:

(*a*) Nous avons changé tout cela.
(*b*) Le pauvre homme!
(*c*) Abîme de Pascal.
(*d*) L'âne chargé de reliques.
(*e*) Le coup de pied de l'âne.
(*f*) Un je ne sais quoi.....

B

Essai (à remettre avant le 17 avril.)

BACCALAURÉAT ÈS-LETTRES.

AVRIL 1899.

I. Faire un tableau de la littérature française à la fin du XVe siècle.

II. Considérer la Satire Ménippée au point de vue du nom, des auteurs, du but et du résultat.

III. Discuter l'œuvre de Rabelais et comparer l'éducation de Gargan, tua à celle conseillée par Montaigne.

IV. Tracer l'origine de l'histoire en France et comparer l'œuvre de chroniqueurs avec celle des historiens du XIXe siècle.

ou

Etablir les différences de fond et de forme entre une tragédie classique et un drame moderne.

V. Reproduire en français moderne les passages suivants:—

1. A un enfant de maison qui recherche les lettres et la discipline non pour le gaing (car uue si vile fin et si abiecte est indigne de la grace et faueur des Muses, et puis elle regarde et depend d'autruy), ny tant pour les commoditez externes que pour les sienes propres, et pour s'en enrichir et parer au dedans, ayant plustost envie d'en tirer vn habil' homme qu'vn homme sçauant, ie voudrais aussi qu'on fut soigneus de luy choisir vn conducteur qui eut plustost la teste bien faicte que bien pleine, et qu'on y requit tous les deux, mais plus les meurs et l'entendement que la science; et qu'il se conduisit en sa charge d'vne nouuelle manière.

2. On lui attachait un câble en quelque haute tour, pendant en terre; par iceluy avec deux mains montoit, puis devaloit roidement et si asseurement que plus ne pourriez, parmy un pré bien egallé. On lui mettoit une grosse perche appuyée à deux arbres: à icelle se pendait par les mains, et d'icelle alloit et venoit, sans les pieds à rien toucher, qu'à grande course on ne l'eust peu aconcepvoir.

1*a*. Quelle est la "nouvelle manière" dont parle Montaigne ?

2*a*. Commenter les formes *iceluy*, *icelle*, *eust*, *aconcepvoir*, *alloit*, en expliquant l'ortographe et l'usage.

AUTRES JOURS.

VI. Thèse ou Essai,
sur "Mirabeau et la Révolution Française"
ou tout autre sujet approuvé par les examinateurs.

N.B.—Répondre en français exclusivement et dater en toutes lettres.

EXAMENS DE FIN D'ANNÉE.

HONNEURS, III ET IV ANNÉES.

31 MARS ET AUTRES JOURS.

Quels sont les principaux traits qui relient les langues romanes.

Expliquer à la suite de quelles circonstances le dialecte de l'Ile de France a supplanté tous les dialectes de langue d'oïl et de langue d'oc.

Passer en revue les premiers monuments de la langue française et résumer la légende de St. Alexis.

Tracer les origines de l'épopée faançaise et décrire la transformation de l'épopée en roman.

Envisager la Chanson de Roland aux points de vue. 1, Historique. 2 Littéraire. 3, Moral.

Racontez la vie et apprécier l'œuvre d'un des écrivains suivants :

Marie de France.
Christine de Pisan.
Madame de Sévigné.
Madame de Staël.
George Sand.

Tracer les origines de l'histoire en France, suivre son développemen jusqu'à nos jours ; comparer Villehardoin et Guizot.

Faire ressortir le caractère satirique des romans de Renart.

Envisager les fabliaux aux points de vue de l'origine, du rôle qu'y joue la femme et des mœurs de l'époque.

Rutebeuf, sa prosodie et son esthétique.

Discuter le fond et la forme du Roman de la Rose.

Apprécier l'œuvre de Commines.

Villon, sa personne et son œuvre.

Raconter un des drames suivants :

La Représentation d'Adam.
Le jeu de St. Nicolas.
Le Miracle de Théophile.

Etablir l'origine et l'évolution du théâtre comique en France jusqu'à Molière.

Rousseau, sa vie, son œuvre et son influence.

Examiner en détail les poétiques des classiques, des romantiques, et des contemporains telles qu'elles sont exposées par Boileau, Victor Hugo, Th. Gautier, Verlaine, Mallarmé Ch. Morice et autres.

GERMAN.

SESSIONAL EXAMINATIONS IN GERMAN.

FIRST YEAR EXAMINATION.

THURSDAY, APRIL 13TH :—AFTERNOON, 2 TO 5.

1. Translate : —

(*a*) Nach einer unruhigen Nacht — der Traumgott hatte ihm eine Uhr vorgegaukelt, und als er darnach greifen wollte, fuhr ein riesiger Ziegenbockskopf zähnefletschend dazwischen — überlegte Max, ob er sich nicht durch ein simuliertes Unwohlsein, wozu ihm der gestern reichlich genossene Geburtstagskuchen einen trefflichen Anhaltspunkt gab, von dem Besuch der Schule befreien sollte, aber er verwarf diesen Plan als den eines Feiglings und marschierte mit seinem Bücherränzchen trutziglich in die Schule.

(*b*) Schmock. Wozu machen Sie sich Sorgen um das? Ich habe bei dem Blumenberg gelernt, in allen Richtungen zu schreiben. Ich habe geschrieben links, und wieder rechts. Ich kann schreiben nach jeder Richtung.

Bolz. Ich sehe, Sie haben Charakter. Ihnen kann's in unserer Zeitung nicht fehlen. Ihr Anerbieten ehrt uns, aber wir können es jetzt nicht annehmen. Eine so welterschütternde Begebenheit, wie Ihr Uebertritt, will reiflich erwogen sein.— Unterdeß sollen Sie Ihr Vertrauen keinem fühllosen Barbaren geschenkt haben.— (bei Seite zu den Andern) Vielleicht ist etwas aus ihm herauszulocken! — Bellmaus, du hast das beste Herz unter uns dreien, du mußt dich heut seiner annehmen.

(*c*) Bolz. Ich habe lange mit meinem Schicksal gegrollt und hatte Stunden, wo ich mir vorkam wie ein Verstoßener. Aber jetzt, wo Sie vor mir stehen in vollem Glanze, so schön, so begehr-

ungswerth, wo mein Gefühl für Sie so warm ist wie jemals, jetzt muß ich doch sagen: Ihr Vater hat zwar rauh an mir gehandelt, aber daß er uns trennte, daß er Sie, die reiche Erbin, an Ansprüche gewöhnt, in bestimmte Kreise eingelebt, verhinderte, Ihr Leben einem wilden Knaben zu schenken, der immer mehr Uebermuth als Kraft gezeigt hatte, das war doch sehr verständig, und er hat ganz recht daran gethan.

(*d*) *Paulet.*—Wie grosz dich auch die Königin zu machen
Verspricht—trau' ihrer Schmeichelrede nicht!
Verlugnen wird sie dich, wenn du gehorcht,
Und ihren eignen Namen rein zu waschen,
Die Blutthat rächen, die sie selbst befahl.

Mortimer.—Die Blutthat sagt Ihr?—

Paulet. Weg mit der Verstellung!
Ich weisz, was dir die Königin angesonnen;
Sie hofft, dasz deine ruhmbegier'ge Jugend
Wilfähr'ger sein wird als mein starres Alter—

(*e*) *Elisabeth.* Begeh' ich eine Thorheit,
So ist es Eure, Lester, nicht die meine.
Ich will Euch heute keinen Wunsch versagen,
Weil ich von meinen Unterthanen allen
Euch heut am wehesten gethan.
Sei 's eine Grille nur von Euch. Dadurch
Giebt Neigung sich ja kund, dasz sie bewilligt
Aus freier Gunst, was sie auch nicht gebilligt.

(*f*) *Kennedy.*—Ach, ich kann diesen Widerspruch nicht reimen!
Noch gestern kündigt man den Tod Euch an—
Und heute wird Euch plötzlich solche Freiheit.
Auch denen, hört'ich sagen, wird die Kette
Gelöst, auf die die ew'ge Freiheit wartet—

(*g*) Sie singen von Lenz und Liebe, von sel'ger goldner Zeit,

Von Freiheit, Männerwürde; von Treu und Heiligkeit:
Sie singen vom allem Süszen, was Menschenbrust durchbebt,
Sie singen von allem Hohen, was Menschenherz erhebt.

Die Höflingsschaar im Kreise verlernet jeden Spott,
Des Königs trotz'ge Krieger, sie beugen sich vor Gott;
Die Königin, zerflossen in Wehmut und in Lust,
Sie wirft den Sängern nieder die Rose von ihrer Brust.

2. Translation at sight:—

Translate.

(*a*) „Wärst du nicht solch ein Kind," sagte Marie endlich, „könntest du allein reisen, so riete ich dir zu gehen. Mich an deiner Stelle, mich sollte kein Befehl und keine Macht der Erde fern halten von dem Krankenbett meines Mannes. Aber du freilich, du kannst nicht gehen, und im Grunde, was solltest du auch dort, so unerfahren wie du armes Kind es bist?"— Ich bin überzeugt, es lag in ihren Worten nur der ehrliche Ausdruck ihrer Gedanken; aber hätte sie die Absicht gehabt, mich noch tiefer in Mutlosigkeit und Trauer zu versenken, sie hätte es nicht besser machen können.

(*b*) Es reden und träumen die Menschen viel
Von bessern künftigen Tagen;
Nach einem glücklichen, goldenen Ziel
Sieht man sie rennen und jagen.
Die Welt wird alt und wird wieder jung,
Doch der Mensch hofft immer Verbesserung.

Es ist kein leerer, schmeichelnder Wahn,
Erzeugt im Gehirne des Thoren;
Im Herzen kündet es laut sich an
Zu was Besserm sind wir geboren
Und was die innere Stimme spricht,
Das täuscht die hoffende Seele nicht.

—*Schiller.*

3. (*a*) Write the 2nd pers. sing., present indic. and the past participle of:—*fuhr, verwarf, verlieszen, vorbehalten, befahl, weisz, vorkam, drängten*, and give the German of:—*I succeeded, it happened, he promised, she washes, he offered, he begged, he lay, he lied, he laid.*

(*b*) What are the possible accentuations of the verbs *hintergehen, übersetzen, umgehen?* Give the meaning in each case. Make a *general* statement as to the meaning of verbs which are both separable and inseparable.

(*c*) Express in German:—*Whose flowers are these? These are mine, and those are your sister's.* Give other possible renderings of *mine;* and translate *Three dollars a yard. The doctor shook his head. Brave Blücher. He threw a stone at his brother's head. On Saturday the 10th of February.*

(*d*) Give the English cognates of *—heit, —schaft, —lein, —chen, —tum;* and form substantives from the following:—*gut, Kind, eitel, Dorf, Flügel, Christ.*

(*e*) Form causative verbs from the following, and give the meaning of both:—*fahren, springen, liegen, trinken, sitzen, fallen;* and give the verbs derived from:—*tot, rein, stark, würdig, fromm, lachen.*

(*f*) Give the German cognates of:—*rib, deep, two, wife, help, plum, that;* and state the two laws which determine the changes.

4. Translate into German:—

(*a*) The length or shortness of the days and nights depends on the nearness or the distance of the sun. (*b*) The student should distinguish vowel-modification from vowel-change in the study of German grammar. (*c*) The noble action of that amiable young queen delighted her faithful people. (*d*) Nature is an open book, the pages of which all can read who have eyes. (*e*) As a Christian you cannot forget so clear a proof of the goodness and wisdom of God. (*f*) Want of water forced the

enemy to give up the seige after they had spent two months in front of the walls of the town. (*g*) The young hero went into the war as a captain, and returned as a celebrated general. (*h*) Don't climb too high, my son; you might fall and break your neck. (*j*) The king has appointed Count B. ambassador at the Spanish court. (*k*) Although the hotel was very bad, we should have remained another night in it, if the landlord had been more polite. (*l*) The poor servant girl would have written to you, if she had been able to write. (*m*) We were hungry and thirsty when we arrived at the end of our long journey through the plundered country. (*n*) The life and fire assurance companies of London are the richest in the world.

INTERMEDIATE EXAMINATIONS. (Men).

GERMAN.

THURSDAY, APRIL 13TH, 1899:—AFTERNOON, 2 TO 5.

1. Translate into English:—

(*a*) Es gi ebt nichts Unheimlicheres, als wenn man bei Mondschein da eigene Gesicht zufällig im Spiegel sieht. In demselben Augenblickd schlug eine schwerfällige, gähnende Glocke, und zwar so lang unes langsam, dasz ich nach dem zwölften Glockenschlage sicher glaubte, es seien unterdessen volle zwölf Stunden verflossen, und es müszte wieder von vorn anfangen, zwölf zu schlagen..... Endlich öffnete sich meine Thür, und langsam trat herein der verstorbene Doktor Saul Aschere Ein kaltes Fieber rieselte mir durch Mark und Bein, ich zitterte wie Espenlaub, und kaum wagte ich das Gespenst auzusehen..... Mir unterdessen lief der kalte Schweisz über den Rücken, Meine Zähne klapperten wie Kastag netten, aus Seelenangst nickte ich unbedingt. Zustimmung hei jedem Satz, womit der spukende Doktor die Absurdität aller Gespensterfurcht bewies.

(*b*) Die Worte kamen aus der gefühlvollen Brust meines Zimmergenossen, des jungen Kaufmanns. Ich gelangte dadurch wieder zu meiner Werkeltagsstimmung, war jetzt im Stande, den Damen über den Sonnenuntergang recht viel Artiges zu sagen, und sie ruhig, als wäre nichts passiert, nach ihrem Zimmer zu führen.

(c) König ist der Hirtenknabe,
Grüner Hügel ist sein Thron,
Über seinem Haupt die Sonne
Ist die schwere goldene Kron'.

Ihm zu Füszen liegen Schafe,
Weiche Schmeichler rotbekreuzt;
Kavaliere sind die Kälber
Und sie wandeln stolz gespreizt.

(d) Dich trug dein Fuß zum Tode — Fahre hin!
(Sie tritt von ihm weg und bleibt gedankenvoll stehen.)
Erhabne Jungfrau, du wirkst Mächtiges in mir!
Du rüstest den unkriegerischen Arm mit Kraft,
Dies Herz mit Unerbittlichkeit bewaffnest du.
In Mitleid schmilzt die Seele, und die Hand erbebt,
Als bräche sie in eines Tempels heil'gen Bau,
Den blühenden Leib des Gegners zu verletzen,
Schon vor des Eisens blanker Schneide schaudert mir;
Doch wenn es Not thut, alsbald ist die Kraft mir da,
Und nimmer irrend in der zitternden Hand, regiert
Das Schwert sich selbst, als wär' es ein lebend'ger Geist.

(e) Wie, edler Herzog? Könntet Ihr so sehr
Der Scham absagen und der Fürstenehre,
In jene Hand, die Euren Vater mordete,
Die Eurige zu legen? Wärt Ihr rasend
Genug, an eine redliche Versöhnung
Zu glauben mit dem Dauphin, den Ihr selbst
An des Verderbens Rand geschleudert habt?
So nah dem Falle wolltet Ihr ihn halten
Und Euer Werk wahnsinnig selbst zerstören?
Hier stehen Eure Freunde. Euer Heil
Ruht in dem festen Bunde nur mit England.

Burgund.

Fern ist mein Sinn vom Frieden mit dem Dauphin;
Doch die Verachtung und den Übermut
Des stolzen Englands kann ich nicht ertragen.

(f) Am folgenden Nachmittag wanderten Reinhardt und Elisabeth jenseits des Sees bald durch die Holzung, bald auf dem vorspringenden Uferrande. Elisabeth hatte von Erich den Auftrag erhalten, während seiner und

der Mutter Abwesenheit Reinhardt mit den schönsten Aussichten der nächsten Umgegend, namentlich von der andern Uferseite auf den Hof selber, bekannt zu machen. Nun gingen sie von einem Punkt zum andern. Endlich wurde Elisabeth müde und setzte sich in den Schatten überhängender Zweige, Reinhardt stand ihr gegenüber, an einen Baumstamm gelehnt; da hörte er tiefer im Walde den Kuckuck rufen, und es kam ihm plötzlich, dies alles sei schon einmal eben so gewesen. Er sah sie seltsam lächelnd an. „Wollen wir Erdbeeren suchen?" fragte er.

(*g*) For woment students of Morrin College only.

Sie hatte sich vorn in den Kahn gesetzt und ihm halb den Rücken zugedreht, so daß er sie nur von der Seite sehen konnte. Ihre Züge waren jetzt noch ernsthafter als gewöhnlich. Über die kurze Stirn hing das Haar tief herein, um den feinen Nasenflügel zitterte ein eigensinniger Zug, der volle Mund war fest geschlossen.— Als sie eine Zeitlang so stillschweigend über Meer gefahren waren, empfand sie den Sonnenbrand, nahm das Brot aus dem Tuch und schlang dieses über die Flechte. Dann fing sie an von dem Brot zu essen und ihr Mittagsmahl zu halten; denn sie hatte auf Capri nichts genossen.

2. Translation at sight.

Translate into English :—

Reinhold selbst war freilich ein Anderer geworden in diesen Jahren, ein ganz Anderer. Das junge Talent, das einst so ungeduldig gegen die beengenden Schranken und Vorurteile seiner Umgebung ankämpfte, hatte sich zum gefeierten Künstler emporgeschwungen, dessen Name weit über die Grenzen Italiens und seiner Heimat hinausdrang, dessen Werke auf den Bühnen aller Hauptstädte heimisch waren, dem Ruhm und Ehre, Gold und Triumphe in reichster Fülle zuströmten. Dieselbe mächtige Wandlung hatte sich auch an seinem Äußeren vollzogen, und unvorteilhaft war diese Veränderung keineswegs, denn statt des bleichen ernsten Jünglings mit den tiefen düsteren Augen stand jetzt ein Mann da, dem man es ansah, daß er mit dem Leben und der Welt vertraut war, und erst bei dem Manne kam die stets so eigentümlich anziehende Art seiner Schönheit zur vollsten Geltung.

3. Translate into German :—

(*a*) I arrived in Montreal at eight o'clock in the morning, and as I was hungry and thirsty, I drove at once to the Windsor Hotel, took a room, unpacked my trunk and breakfasted. I might have remained in my room and sent for my breakfast, but in the first place I do not like

to eat alone, and secondly, I expected to meet a friend in the large dining hall. We spent an agreeable hour together, then we decided to take a drive. We visited the great University which lies at the foot of the so-called mountain. If I am not mistaken, we ought at a later period to meet some of its students in public life, for it should be the wish of some of them to serve their country and their fellow citizens.

(*b*) He undressed himself hastily, sprang into the water and drew the sinking boy out. (*c*) This gentleman teaches not only the French language, but also singing and dancing. (*d*) The weather cock on the church tower shows whence the wind blows. (*e*) Go straight on; you will soon see a three-cornered house; then turn to the right. (*f*) I told him the truth, but I am sorry to say I was not believed. (*g*) It is not worth while to remember every little misfortune. (*h*) Many benches stand around the fountain, where one on Sunday sees a crowd of work-people. (*i*) This wine only costs half a dollar a bottle, I would gladly pay double the sum for it. (*j*) This stormy life ended, the old hero sleeps the sleep of the just. (*k*) Yesterday came the news that the king had died, but to-day we learn that the news is not true.

4. (*a*) Mention the classes of verbs which do not take the augment in the past participle. (*b*) State the rules which govern vowel *Ablaut* in the second and third persons singular of the present indicative. (*c*) In what circumstances do we use the apparently infinitive form of the Past Participle of the Modal Auxiliaries? (*d*) Give well composed sentences illustrating the passive use of intransitive verbs governing the dative case. (*e*) Give the principal parts of all the strong verbs in extract 1 (*a*).

5. (*a*) Mention other noted works on the subject of the Maid of Orleans. (*b*) Discuss from all points of view the tragic guilt of Schiller's Joan and the necessity of giving her a different end from the Joan of history.

6. (*a*) Give some facts concerning Heine's life during the years which immediately preceded his graduation. (*b*) Write a German composition of not less than one hundred and fifty words on Heine's youthful days.

SESSIONAL EXAMINATIONS IN GERMAN.

SECOND YEAR DONALDAS.

THURSDAY, APRIL 13TH:—AFTERNOON, 2 TO 5.

1. Translate:—

(*a*) Die Verwirrung im Gesellschaftszimmer war fürchterlich. Während die Frauen um Marie beschäftigt waren, suchten die Männer ihre Hüte und drängten dem Ausgang zu. Unter den Ersten, die das gestörte Fest verließen, war die Eckart'sche Familie; der letzte Gast auf dem Schauplatz war der Major, und diesem war es vorbehalten, den ahnungslosen Kanzleirat, der, froh über das gelungene Feuerwerk, aus dem Garten zurückkam, um nunmehr die Verlobung zu proklamieren, schonungsvoll mitzuteilen, was geschehen war.

(*b*) Ich ward Soldat aus Parteilichkeit, ich weiß selbst nicht für welche politische Grundsätze, und aus der Grille, daß es für jeden ehrlichen Mann gut sei, sich in diesem Stande eine Zeitlang zu versuchen, um sich mit allem, was Gefahr heißt, vertraulich zu machen, und Kälte und Entschlossenheit zu lernen. Nur die äußerste Not hätte mich zwingen können, aus diesem Versuche eine Bestimmung, aus dieser gelegentlichen Beschäftigung ein Handwerk zu machen.

(*c*) Ich bin Ihre Gebieterin, Tellheim; Sie brauchen weiter keinen Herrn. Sie verabschiedet zu finden, das Glück hätte ich mir kaum träumen lassen! — Doch Sie sind nicht bloß verabschiedet: Sie sind noch mehr. Was sind Sie noch mehr? Ein Krüppel, sagten Sie? Nun, der Krüppel ist doch noch ziemlich ganz und gerade; scheint doch noch ziemlich gesund und stark. Lieber Tellheim, wenn Sie auf den Verlust Ihrer gesunden Gliedmaßen betteln zu gehen denken, so prophezeie ich Ihnen, daß Sie vor den wenigsten Thüren etwas bekommen werden; ausgenommen vor den Thüren der gutherzigen Mädchen, wie ich.

(*d*) Nicht dem Deutschen geziemt es, die fürchterliche Bewegung Fortzuleiten und auch zu wanken hierhin und dorthin.

Dies ist unser! so laß uns sagen und so es behaupten!
Denn es werden noch stets die entschlossenen Völker gepriesen,
Die für Gott und Gesetz, für Eltern, Weiber und Kinder
Stritten und gegen den Feind zusammenstehend erlagen.
Du bist mein; und nun ist das Meine meiner als jemals.
Nicht mit Kummer will ich's bewahren und sorgend genießen,
Sondern mit Mut und Kraft. Und drohen diesmal die Feinde,
Oder künftig, so rüste mich selbst und reiche die Waffen.

(*e*) Musz ich doch noch einmal in das verdammte Haus kommen! Ein Briefchen von meinem Herrn an das gnädige Fräulein, das seine Schwester sein will.—Wenn sich nur da nichts anspinnt! — Sonst wird des Brieftragens kein Ende werden.—Ich wäre es gern los; aber ich möchte auch nicht gern ins Zimmer hinein.—Das Frauenszeug fragt so viel, und ich antworte so ungern! Ha, die Thüre geht auf.—Wie gewünscht! das Kammerkätzchen!

2. (*a*) Write the 3rd pers. sing. present indicative of:—*verlieszen, vorbehalten, geschehen, gelungene, ausgenommen, erlagen, stritten, möchte, drängten, rüste.*

(*b*) Comment on the use of *will* in (*e*) and of *meiner* in (*d*). What other modal verb can be used in a similar manner, and with what meaning?

(*c*) What is the original meaning of the verbs *dürfen* and *können*. How would you distinguish between *ich soll* and *ich muss*. Translate:—*I ought to have. I should have liked to. I may. I might have, but did not want to. It may be. He is said to have come yesterday. He shall never see me again.*

(*d*) What three words represent *when* in German, and how are they used? Illustrate by short sentences.

(*e*) Translate *Ich habe ihn singen hören.* What part of the verb is *hören*. Mention six other verbs used in the same way, and state the rule.

(*f*) When do you use the genitive, and when the accusative, in expressions of time? Illustrate by examples.

(*g*) When and where was *Minna von Barnhelm* composed? Wherein does its "political significance" lie?

3. Translate at sight:—

(*a*) Er brach, heiß weinend, in die bitterſten Vorwürfe gegen ſich ſelber aus, und die Verzweiflung, in der er war, mußte mir ſelber Mitleiden einflößen. Ich ſprach ihm Troſt ein, verſicherte ihm wiederholt, ich ſetze keinen Zweifel in ſeine Treue, und ſchickte ihn alsbald nach dem Hafen, um wo möglich die Spuren des ſeltſamen Mannes zu verfolgen. Aber an dieſem ſelben Morgen waren ſehr viele Schiffe, die widrige Winde im Hafen zurückgehalten, ausgelaufen, alle nach andern Weltſtrichen, alle nach andern Küſten beſtimmt, und der graue Mann war ſpurlos wie ein Schatten verſchwunden.

(*b*) Dieſe Worte kamen aus der gefühlvollen Bruſt meines Zimmergenoſſen, des jungen Kaufmanns. Ich gelangte dadurch wieder zu meiner Werkeltagsſtimmung, war jetzt im Stande, den Damen über den Sonnenuntergang recht viel Artiges zu ſagen, und ſie ruhig, als wäre nichts paſſiert, nach ihrem Zimmer zu führen. Sie erlaubten mir auch, ſie noch eine Stunde zu unterhalten. Wie die Erde ſelbſt, drehte ſich unſere Unterhaltung um die Sonne. Die Mutter äußerte, die in Nebel verſinkende Sonne habe ausgeſehen wie eine rotglühende Roſe, die der galante Himmel herabgeworfen in den weitausgebreiteten, weißen Brautſchleier ſeiner geliebten Erde. Die Tochter lächelte und meinte, der öftere Anblick ſolcher Naturerſcheinungen ſchwäche ihren Eindruck.

4. Translate into German:—

As Dean Swift, accompanied by his servant Tom, was once on a journey, he put up (einkehren) at (in) an inn where he stayed over night. In the morning he called for (nach) his boots, and the servant brought them to him uncleaned

(ungeputzt); and when Swift asked him why he had not cleaned them, the servant replied: "As you are going to ride, I thought they would soon be dirty again." Swift said nothing, but told (*ordered*) the landlord not to give his servant any breakfast. Soon after, when Swift was about (im Begriff) to mount (besteigen) his horse, Tom remarked that he had not had anything to eat, and Swift answered: "That does not matter (macht nichts); if you had, you would soon be hungry again." They rode off and Swift took a book out of his pocket and began to read. A gentleman met them and asked the servant whither they were going. "To (zu den) heaven," replied Tom; "for I am fasting (fasten) and my master is praying."

THIRD AND FOURTH YEARS.

GERMAN.

MONDAY, APRIL 17TH: —AFTERNOON, 2 TO 5.

1. Translate into English:—

(*a*) Lasz mich zum erstenmal mit freiem Herzen
In deinen Armen reine Freude haben!
Ihr Götter, die mit flammender Gewalt
Ih schwere Wolken aufzuzehren wandelt,
Und gnädig-ernst den lang' erflehten Regen
Mit Donnerstimmen und mit Windesbrausen
In wilden Strömen auf die Erde schüttet,
Doch bald der Menschen grausendes Erwarten
In Segen auflös't und das bange Staunen
In Freudeblick und lauten Dank verwandelt,
Wenn in den Tropfen frischerquickter Blätter
Die neue Sonne tausendfach sich spiegelt,
Und Iris freundlich bunt mit leichter Hand
Den grauen Flor der letzten Wolken trennt:
O, laszt mich auch an meiner Schwester Armen,

An meines Freundes Brust, was ihr mir gönnt,
Mit vollem Dank genieszen und behalten!

(*b*) Vernehm' ich dich, so wendet sich, o Teurer,
Wie sich die Blume nach der Sonne wendet,
Die Seele, von dem Strahle deiner Worte
Getroffen, sich dem süszen Troste nach.
Wie köstlich ist des gegenwärt'gen Freundes
Gewisse Rede, deren Himmelskraft
Ein Einsamer entbehrt und still versinkt!
Denn langsam reift verschlossen in dem Busen,
Gedank' ihm und Entschlusz; die Gegenwart
Des Liebenden entwickelte sie leicht.

(*c*) Hier hält das Opfertier ermüdet still.—
Nun gut! Ich mag nicht, mag nicht näher wissen,
Was in mir vorgeht; mag voraus nicht wittern,
Was vorgehen wird.—Genug, ich bin umsonst
Geflohen, umsonst.—Und weiter konnt' ich doch
Auch nichts als fliehen! Nun komm', was kommen soll!—
Ihm auszubeugen, war der Streich zu schnell
Gefallen, unter den zu kommen ich
So lang und viel mich weigerte.—Sie sehn,
Die ich zu sehn so wenig lüstern war,—
Sie sehn, und der Entschlusz, sie wieder aus
Den Augen nie zu lassen—Was Entschlusz?
Entschlusz ist Vorsatz, That: und ich, ich litt',
Ich litte blosz. Sie sehn, und das Gefühl,
An sie verstrickt, in sie verwebt zu sein,
War eins.

(*d*) *Tempelherr*, (gelassen) Ich fühle
Des Vorwurfs ganze Last,—die Saladin
In diese Silbe presst! Ah, wenn ich wüszte,
Wie Assad,—Assad sich an meiner Stelle
Hierbei genommen hätte!

Saladin. Nicht viel besser!—
Vermutlich, ganz so brausend!—Doch, wer hat
Denn dich auch schon gelehrt, mich so wie er
Mit einem Worte zu bestechen? Freilich,
Wenn alles sich verhält, wie du mir sagest,
Kann ich mich selber kaum in Nathan finden.—
Indesz, er ist mein Freund, und meiner Freunde
Musz keiner mit dem andern hadern.—Lasz
Dich weisen! Geh behutsam! Gieb ihn nicht
Sofort den Schwärmern deines Pöbels preis!
Verschweig, was deine Geistlichkeit an ihm
Zu rächen mir so nahe legen würde!
Sei keinem Juden, keinem Muselmanne
Zum Trotz ein Christ!

2. (*a*) Give carefully constructed sentences illustrating the use of the Ethical Dative and the Dative after an inseparable compound verb with prefix *ent*—.

(*b*) What verb would be used in modern prose in place of *genommen* (sect. *d*, l. 5)? Comment on the use of *mag* (sect. *c*, ll. 2, 3), and of *deine Geistlichkeit* (sect. *d*, l. 15).

3. Answer any *two* of the following:—

(*a*) Where did Lessing get his story of the rings? How far has he altered it, and why?

(*b*) Outline briefly the plot of Euripides' *Iphigenia*, and show in what respect Gœthe departed from it, and in what the moral superiority of his conception consists.

(*c*) Into what periods may Gœthe's life be divided? Give reasons for the division you adopt, and describe in detail Gœthe's mental development and literary activity during any *one* of the periods.

4. Translate at sight:—

(*a*) Da ich mich nun in Sicherheit glaubte, ritt ich langsamer und fühlte nun erst, wie unendlich ungern ich mich entfernte. Ich

ergab mich aber in mein Schickſal, dachte an den Spaziergang von geſtern abend mit der größten Ruhe und nährte die ſtille Hoffnung, ſie bald wiederzuſehen. Doch verwandelte ſich dieſes ſtille Gefühl bald wieder in Ungeduld, und nun beſchloß ich, ſchnell in die Stadt zu reiten, mich umzuziehen, ein gutes friſches Pferd zu nehmen; da ich denn wohl noch vor Tiſche oder, was wahrſcheinlicher war, zum Nachtiſche, oder gegen Abend gewiß, wieder eintreffen und meine Vergebung erbitten konnte.

(*b*) Geworden iſt ihm eine Herrſcherſeele,
Und iſt geſtellt auf einen Herrſcherplatz.
Wohl uns, daß es ſo iſt! Es können ſich
Nur wenige regieren, den Verſtand
Verſtändig brauchen — Wohl dem Ganzen, findet
Sich einmal einer, der ein Mittelpunkt
Für viele tauſend wird, ein Halt, — ſich hinſtellt,
Wie eine feſte Säul' an die man ſich
Mit Luſt mag ſchließen und mit Zuverſicht.

5. Translate at sight :—

(*a*) The French are famous for their politeness, as everybody knows. We find a good example of this in the story of the mayor, who had *to make out a pass* (einen Pasz ausfertigen) for a countess, in whose service he was. Now the countess had unfortunately lost an eye in an accident some time before. How was the poor mayor to describe her eyes? He did not wish to offend the lady, for she was *coquettish* (kokett) as well as rich and influential. A happy thought struck him suddenly, and the following was written: "Eyes light, large, beautiful, one absent." As might be expected, even the countess had to laugh at the clever idea of the polite mayor.

(*b*) One surprise after another awaited the poor Templar. Firstly, he thought Nathan would at once give him his daughter; secondly, he was certain that Saladin could not refuse to stand by him; thirdly, he was to discover that Recha whom he hoped to receive as his bride was his own sister, whom he had never

known—for she was born after he had left Germany; and, lastly, that Saladin, when he gave him his freedom on account of a striking likeness to his own brother Assad, had indeed saved the life of his own nephew. The drama closes with the noble unselfishness of Nathan, who willingly gives his beloved Recha back to those to whom she belonged by right of birth, but we feel that the bonds which bound her to him will ever remain unbroken.

B.A. AND THIRD YEAR HONOURS.

GERMAN.

MONDAY, APRIL 3RD:—MORNING, 9 TO 12.

N.B.—*Questions expressed in German are to be answered in German.*

1. Translate the following passages into English:

(*a*) Oberon, *Erster Gesang*, lines 337-352.

(*b*) Messias, *Erster Gesang*, lines 280-290.

(*c*) Don Carlos, Act 3, Scene 3, Dem Prinzen.....ein Diadem

(*d*) Leiden des Jungen Werther, am. 28 Aug.

Es ist wahr ..... verfaulen lassen.

(*e*) Sessenheim, Huss' edition, p. 35, Nach diesem ..... werden.

2. Nennen Sie die Goethe'schen Produkte der Sturm-und Drangperiode. Nennen Sie andere "Stürmer und Dränger." Erläutern Sie die Stärke und die Schwäche von Werther's Charakter (nach Hettner).

3. Vergleichen Sie den Messias mit Milton's "Verlorenem Paradies."

4. In welcher Zeitschrift ist der Oberon zuerst erschienen? Welche Werke dienten Wieland als Vorbilder? Unterscheiden Sie drei Haupthandlungen im Oberon.

GERMAN.

B. A. AND THIRD YEAR HONOURS.

SATURDAY, APRIL 8TH:—MORNING, 9 TO 12.

Kluge's Litteraturgeschichte, Behaghel's Deutsche Sprache, German Composition.

N.B --Questions expressed in German are to be answered in German.

Translate into German:

Hearing that my friend was visiting in a neighbouring town and was going to stay for a couple of weeks, I wrote inviting him to visit me too. How astonished I was, then, an hour after sending the letter to the post office, to see him standing before me. He had come intending to surprise me and he succeeded. Our rejoicing at seeing each other was great, as you may guess, for we had not met for many years. Having talked for some time, we took a walk down to the boathouse, hoping to hire a boat and go for a sail. There being very little wind, however, we were retracing our steps when a little girl, catching sight of us, came running up, crying and begging us to get her hat, which had fallen into the water.

1. Zu welchen Konsonanten hat sich das germanische *t* im An—und Auslaut verschoben? Geben Sie Beispiele dieser Verschiebung.

2. Welche Dialekte umfaszt das Oberdeutsche?

3. Vergleichen Sie die Vokale der Endsilben in der altdeutschen und mitteldeutschen Zeit.

4. Erläutern Sie den folgenden Satz: "Die deutsche Sprache gewinnt in der mittleren Periode innerlich und äuszerlich an Gebiet."

5. Was für Uberbleibsel der gotischen Sprache besitzen wir noch?

1. Wie heiszen die ältesten nordischen Quellen der germanischen Mythologie? Wann und von wem sind sie verfaszt worden? Warum findet man die ältesten Göttersagen im Norden?

2. Wie heiszen die vier wichtigsten christlichen Gedichte des 9. Jahrhunderts?

3. Warum ist Otfried so bedeutend in der Geschichte der deutschen Verskunst?

4. Auf welche Eigenschaften legte die höfische Poesie des 12. Jahrhunderts das Hauptgewicht? Welches Metrums bediente sie sich?

5. Nennen Sie Hartmann's Werke. Welche Quellen hat er benutzt? Nach wem hat Wolfram gedichtet?

6. An welchen Höfen wurde in den beiden Blütezeiten der deutschen Litteratur die Dichtung besonders gepflegt?

7. Geben Sie einige mytische Züge des Nibelungenlieds an, welche nur durch die ältere nordische Form der Saga zu erklären sind. Wie bezeichnet man gewöhnlich die drei bedeutendsten Nibelungenhandschriften? Erklären Sie die Nibelungenstrophe.

8. Was ist ein Wächterlied? In welcher Litteratur findet man die besten Beispiele dieser Gattung?

9. Auf welche Weise hat Walther von der Vogelweide das Feld der Minnelieder erweitert?

10. Charakterisieren Sie den Meistergesang. Was bedeutet "Tabulatur?"—"Merkmeister?"

11. Nennen Sie einige Werke des gröszten protestantischen Polemikers und Satirikers der Reformationszeit. Welches Dialektes hat sich Luther bei seiner Bibelübersetzung bedient?

GERMAN.

B.A. HONOURS.

Lessing's Laokoon, Herder's Volkslieder, Freytag's Friedrich der Grosze, Scheffel's Trompeter von Säkkingen, Heine's Lyrische Gedichte, Grillparzer's Sappho, Sudermann's Ehre.

THURSDAY, APRIL 6TH:—MORNING, 9 TO 12.

N.B.—*Questions expressed in German are to be answered in German.*

1. Translate the following passages into English;

(*a*) *Laokoon*, Goschen edition, page 221, Nichts ist.... kennen.

(*b*) *Volkslieder*, Suphan's edition, page 480, four stanzas.

(*c*) *Friedrich der Grosze*, Hager's edition, lines 1757-1772.

(*d*) *Sappho*, Act 2, first thirteen lines.

(*e*) *Lyrische Gedichte*, Elster edition, page 72, Ich grolle nicht ..... elend bist.

(*f*) *Der Trompeter*, Wenckebach's edition, lines 1891-1909.

2. Geben Sie den Inhalt der Sudermann' schen "Ehre" an.

3. Geben Sie eine kurze Biographie Freytag's.

4. Welches waren die neuen Lehren, die Herder dem jungen Goethe in Straszburg mitteilte?

5. Die Schweizer sagten, "die Poesie sei eine redende Malerei." Was sagte Lessing zu dieser Lehre? Welchen Einflusz hat der Laokoon auf die schildernde Litteratur geübt?

6. In welchem Verhältnis stand Heine zum Judentum, zum Christentum, zu den positiven Religionen überhaupt?

HEBREW.

SECOND YEAR EXAMINATION.

THURSDAY, MARCH 30TH:—MORNING, 9 TO 12.

Examiner,..... PROF. D. COUSSIRAT, B.A., B.D., D.D., OFFICIER DE L'INSTRUCTION PUBLIQUE.

1. Translate literally Genesis VIII, 12, 13, 14.

וַיֶּחֱל עוֹד שִׁבְעַת יָמִים אֲחֵרִים וַיְשַׁלַּח אֶת־הַיּוֹנָה
וְלֹא־יָסְפָה שׁוּב־אֵלָיו עוֹד: וַיְהִי בְּאַחַת וְשֵׁשׁ־מֵאוֹת
שָׁנָה בָּרִאשׁוֹן בְּאֶחָד לַחֹדֶשׁ חָרְבוּ הַמַּיִם מֵעַל הָאָרֶץ
וַיָּסַר נֹחַ אֶת־מִכְסֵה הַתֵּבָה וַיַּרְא וְהִנֵּה חָרְבוּ פְּנֵי
הָאֲדָמָה: וּבַחֹדֶשׁ הַשֵּׁנִי בְּשִׁבְעָה וְעֶשְׂרִים יוֹם לַחֹדֶשׁ
יָבְשָׁה הָאָרֶץ:

(*a*) Parse (1) וַיֶּחֱל (2) יָסְפָה (3) וַיָּסַר (4) מִכְסֵה (5) וּבַחֹדֶשׁ.

(*b*) Root and meaning of נֹחַ.

(*c*) Render into Hebrew:—In the thirtieth day of the month.

2. Translate literally Exodus XX, 8, 9, 10, 11.

זָכוֹר אֶת־יוֹם הַשַּׁבָּת לְקַדְּשׁוֹ: שֵׁשֶׁת יָמִים תַּעֲבֹד
וְעָשִׂיתָ כָּל־מְלַאכְתֶּךָ: וְיוֹם הַשְּׁבִיעִי שַׁבָּת | לַיהוָה
אֱלֹהֶיךָ לֹא־תַעֲשֶׂה כָל־מְלָאכָה אַתָּה | וּבִנְךָ־וּבִתֶּךָ

עַבְדְּךָ וַאֲמָתֶךָ וּבְהֶמְתֶּךָ וְגֵרְךָ אֲשֶׁר בִּשְׁעָרֶיךָ: כִּי
שֵׁשֶׁת־יָמִים עָשָׂה יְהוָה אֶת־הַשָּׁמַיִם וְאֶת־הָאָרֶץ אֶת־הַיָּם
וְאֶת־כָּל־אֲשֶׁר־בָּם וַיָּנַח בַּיּוֹם הַשְּׁבִיעִי עַל־כֵּן בֵּרַךְ יְהוָה
אֶת־יוֹם הַשַּׁבָּת וַיְקַדְּשֵׁהוּ:

(*a*) Parse זָכוֹר. Explain the use of that mood.

(*b*) Parse לְקַדְּשׁוֹ. Has this stem here a causative meaning?

(*c*) Parse שֵׁשֶׁת and substitute for it another form of the same word

(*d*) State the reason given in Deuteronomy V, 15 for keeping the Sabbath holy.

(*e*) Render into Hebrew :—Thou hast spoken with us and we did not die.

3. Translate literally—Judges V, 6, 7, 8.

בִּימֵי שַׁמְגַּר בֶּן־עֲנָת בִּימֵי יָעֵל חָדְלוּ אֹרְחוֹת וְהֹלְכֵי
נְתִיבוֹת יֵלְכוּ אֳרָחוֹת עֲקַלְקַלּוֹת: חָדְלוּ פְרָזוֹן בְּיִשְׂרָאֵל
חָדָלּוּ עַד שַׁקַּמְתִּי דְבוֹרָה שַׁקַּמְתִּי אֵם בְּיִשְׂרָאֵל: יִבְחַר
אֱלֹהִים חֲדָשִׁים אָז לָחֶם שְׁעָרִים מָגֵן אִם־יֵרָאֶה וָרֹמַח
בְּאַרְבָּעִים אֶלֶף בְּיִשְׂרָאֵל:

(*a*) Parse and analyze (1) בִּימֵי (2) שַׁקַּמְתִּי (Name the accents and state their use) (3) יֵרָאֶה.

(*b*) Write a note on the sense of פְּרָזוֹן.

(*c*) What is the singular of שְׁעָרִים?

(*d*) Translate into Hebrew :—Ye chose new gods in those days.

4. What are the peculiarities of ע"ו verbs in the perfect of Kal, Niphal and Hiphil?

5. Inflect the Piel imperfect of בָּרַךְ.

6. Inflect דֶּרֶךְ with all suffixes in the singular and in the plural.

7. Point, translate and parse :—סכום פסוקי דספר בראשית אלף וחמש מאות ושלשים וארבעה. אך לד סימן.

8. Explain the letters פפפ and סכם found in the Thorah.

HEBREW.

B. A. ORDINARY.

THURSDAY, MARCH 30TH :—MORNING, 9 TO 12.

Examiner, ...PROF. D. COUSSIRAT, B.A., B.D., D.D., OFFICIER DE L'INSTRUCTION PUBLIQUE.

1. Translate literally Job XIX, 23 to 27 inclusive.

(*a*) Parse and analyze (1) וְיֶחְקוּ (2) יִבָּתְבוּן (3) מִלִּי.

(*b*) Characteristics of פ"נ verbs in Kal imperfect, imperative and infinitive.

(*c*) Give the English equivalent of מִי יִתֵּן.

(*d*) Inflect fully סֵפֶר singular and plural.

(*e*) Comment on גֹּאֵל.

(*f*) Give the various renderings of verses 25 to 27.

2. Translate literally Ecclesiastes III, 15 to 18 inclusive.

(*a*) Point out Aramaisms in verse 15.

(*b*) Peculiarities of ל"ה verbs in the perfect of all stems.

(*c*) Inflect fully מָקוֹם in the singular.

(*d*) Explain the form שָׁמָּה.

(*e*) Is שָׁם in verse 17 referring to a future life?

(*f*) What does Ecclesiastes mean by בְּהֵמָה in verse 18?

3. Translate literally Psalm LX, 1 to 4 inclusive.

(*a*) Parse and explain the superscription.

(*b*) Analyze וַיֹּשֶׁב. Why has ֶ under שׁ been substituted for ָ?

(*c*) How are the numerals formed from 11 to 20?

(*d*) Translate: He has visited me; visit thou me; to visit me.

(*e*) Explain the Masoretic notes in verse 2.

4. Render into Hebrew:—(1) Our God has revealed His glory to His children. (2) Have mercy upon us. (3) Create in us a clean heart. (4) Teach transgressors the way of salvation.

5. In what case is the imperfect substituted for the imperative?

6. What is included in Aramaic Literature?

7. State the peculiarities of the Rabbinical Dialect.

B.A. HONOURS.

HEBREW.

THURSDAY, MARCH 30TH:—MORNING, 9 TO 12.

Examiner,.....D. COUSSIRAT, B.A., B.D., D.D., OFFICIER DE L'INSTRUCTION PUBLIQUE.

1. Translate literally:—Malachi II, 17 to III, 1-5 inclusive.

(*a*) Who is the מַלְאַךְ of III, 1?

(*b*) What is the precise meaning of פִּתְאֹם?

(*c*) Parse and analyze בְּהֵרָאוֹתוֹ.

(*d*) Translate the proper name לֵוִי.

(*e*) Is the Syriac version of Malachi a faithful reproduction of the Hebrew?

2. Translate literally—Psalm XLVI.

(*a*) Write a note on the title, the date and the contents of that psalm.

(*b*) Point out two or three unusual forms in it.

(*c*) Translate the Masoretic notes appended to it.

3. Translate literally--Job XXXII, 2 to 10.

(*a*) Parse צָדְקוֹ.

(*b*) Point out the Aramaisms in that section.

(*c*) State the main arguments for and against the antiquity of the book of Job.

4. Point and translate the Masoretic note found at the end of that book.

SEMITIC LANGUAGES AND LITERATURE.

B.A. HONOURS.

THURSDAY, 30TH MARCH:—AFTERNOON, 2 TO 5.

Examiner,.... PROF. D. COUSSIRAT, B.A., B.D., D.D., OFFICIER DE L'INSTRUCTION PUBLIQUE.

SIGHT TRANSLATION.

Amos, chap. V, v. 1 to 10 inclusive.

שִׁמְעוּ אֶת־הַדָּבָר הַזֶּה אֲשֶׁר אָנֹכִי נֹשֵׂא עֲלֵיכֶם קִינָה
בֵּית יִשְׂרָאֵל: נָפְלָה לֹא־תוֹסֵף קוּם בְּתוּלַת יִשְׂרָאֵל
נִטְּשָׁה עַל־אַדְמָתָהּ אֵין מְקִימָה: כִּי כֹה אָמַר אֲדֹנָי
יְהוִה הָעִיר הַיֹּצֵאת אֶלֶף תַּשְׁאִיר מֵאָה וְהַיּוֹצֵאת מֵאָה
תַּשְׁאִיר עֲשָׂרָה לְבֵית יִשְׂרָאֵל: כִּי כֹה אָמַר יְהוָה
לְבֵית יִשְׂרָאֵל דִּרְשׁוּנִי וִחְיוּ: וְאַל־תִּדְרְשׁוּ בֵּית־אֵל
וְהַגִּלְגָּל לֹא תָבֹאוּ וּבְאֵר שֶׁבַע לֹא תַעֲבֹרוּ כִּי הַגִּלְגָּל
גָּלֹה יִגְלֶה וּבֵית אֵל יִהְיֶה לְאָוֶן: דִּרְשׁוּ אֶת־יְהוָה וִחְיוּ

פֶּן־יִצַּלַּח כָּאֵשׁ בֵּית יוֹסֵף וְאָכְלָה וְאֵין־מְכַבֶּה לְבֵית־אֵל׃
הַהֹפְכִים לְלַעֲנָה מִשְׁפָּט וּצְדָקָה לָאָרֶץ הִנִּיחוּ׃ עֹשֵׂה
כִימָה וּכְסִיל וְהֹפֵךְ לַבֹּקֶר צַלְמָוֶת וְיוֹם לַיְלָה הֶחְשִׁיךְ׃
הַקּוֹרֵא לְמֵי־הַיָּם וַיִּשְׁפְּכֵם עַל־פְּנֵי הָאָרֶץ יְהוָה שְׁמוֹ׃
הַמַּבְלִיג שֹׁד עַל־עָז וְשֹׁד עַל מִבְצָר יָבוֹא׃

HEBREW PROSE.

1. Return (masc. sing.) unto the Lord, for thou hast fallen by thy iniquity.
2. Who is wise, and he shall understand?
3. Hear (masc. plur.) this word that I have spoken against you.
4. Seek (masc. plur.) good, and not evil, that ye may live.
5. The ways of the Lord are right, and the just shall walk in them
6. Hate (masc. plur.) the evil and love the good.
7. The Lord is slow to anger, and great in power.
8. He knows the thoughts of man.
9. Blessed is the man whom thou teachest out of thy law.
10. O Lord, help us and save us!
11. How manifold are the works of the Lord!
12. Remember us, (masc. sing.) and visit us with thy salvation.

B. A. HONOURS.

SYRIAC.

THURSDAY, APRIL 13TH:—9 TO 12 A.M.

Examiner,..... D. COUSSIRAT, B.A., B.D., D.D., OFFICIER DE L'INSTRUCTION PUBLIQUE.

1. Transliterate the following:—

Ter^{e}' 'e^{n}oun b^{e}shabhto' d pharz^{e}lo': Wa'ykh mo'nai pachoro' t^{e}naphets 'e^{n}oun. Hosho' malke' 'estael (w): we'thr^{e}daw dayony^{e}h

dhar^{e}c$\dot{o}$'. P^{e}louch (w) l^{e}moryo' bh^{e}dechelto' wou'chdounoyh (y) bartîtho'.

Nashek (w) b$_{e}$ro' dh$_{e}$lo' nergaz: w^{e}thi'bhdoun men 'ourcheh metûl d^{ec}ad kalîl yoked rougzeh: toubhaihoun l^{e}kûl dathkilîn $_{e}$law (hv).

(*a*) Translate the above:

(*b*) Tabular view of *kom* in the perfect and imperfect of Peal Ethpeel, Aphel and Pael.

(*c*) Figure the pronunciation of *yudh* in the Syriac word דברי.

(*d*) What light does a study of verses 9 and 12 throw on the Syrian translators' views of the text, grammar and exegesis of Psalm 2?

(*e*) Examples of the same root in the Syriac and the Hebrew having a different meaning in the two languages.

(*f*) Render into Syriac: Go thou and see why the three rulers have taken counsel together against the Lord and against his Messiah.

2. Translate with notes Jonah IV, 8 to the end of the chapter.

(Notes include the parsing of irregular verbs and nouns, rules of syntax, peculiarities of all kinds.)

3. Translate literally Matthew XXVII, 32 to 38 inclusive.

(*a*) Inflect fully *rîsh* in the singular and the plural.

(*b*) Render into Syriac: God will bless you if ye will follow Him and serve Him.

4. Characterize the Peshito as a translation of the Old and New Testament.

B. A. HONOURS.

HISTORY OF THE SEMITIC LANGUAGES AND LITERATURE.

SATURDAY, APRIL 15TH:—2 TO 5 P.M.

Examiner.....D. COUSSIRAT, B.A, B.D, D.D, OFFICIER DE L'INSTRUCTION PUBLIQUE

1. Which of the Semitic languages is the most ancient?

2. Characteristics of the Semitic mind.

3. Relations with other families of languages.

4. Geographical sphere and history of Hebrew as a spoken language ?

5. The cultivation of Hebrew as a dead language.

6. Characteristics of Aramaic.

7. Arabic of educated society.

8. Peculiarities of the Samaritan or of the Rabbinical dialect.

9. State the contents of the Cylinder of Cyrus.

10. Discovery of the Moabite Stone and importance of its contents.

B.A. HONOURS.

COMPARATIVE GRAMMAR IN SEMITIC LANGUAGES.

SATURDAY, 22ND APRIL :—2 TO 5 P.M.

Examiner,..... ....D. COUSSIRAT, B.A., B.D., D. D., OFFICIER DE L'INSTRUCTION PUBLIQUE

1. Alphabets in the Semitic Languages. Describe them. Their origin.

2. Tabular view of the permutation of the various classes of letters (consonants) in the Semitic Alphabet.

3. Supplementary vowels, specially in Hebrew.

4. How is the article expressed in the Semitic Languages ?

5. Feminine terminations in Aramaic and Arabic.

6. Pronominal suffixes to the nouns in Arabic, Hebrew and Aramaic.

7. Relation of the verb to nominal form.

8. The accentuation of the Imperfect.

9. Moods of the Imperfect in Arabic and Assyrian.

10. Verbs ע"ע in Arabic, Hebrew and Syriac.

THE NEIL STEWART PRIZE.

TRANSLATION.

THURSDAY, MARCH 30TH :—9 TO 12.

Examiner :—PROFESSOR D. COUSSIRAT, B.A., B.D., D.D., Officier de l'Instruction Publique.

1. Translate literally Exodus xv., 1 to 12 inclusive.

(*a*) Distinguish between אַדִּיר and אַבִּיר.

(*b*) Is the A. V. correct in its rendering of גָּאָה in verse 2?

(*c*) Remark on the peculiarities of יְכַסְיֻמוֹ.

(*d*) To what English tense does the Hebrew imperfect correspond in this section?

(*e*) What is the force of אוֹיֵב without the article (v. 6)?

(*f*) Parse and analyze צָלְלוּ.

(*g*) Give the names of the Pharaohs under whom Joseph came to Egypt, Moses was brought up, and the Exodus of Israelites took place.

(*h*) Discuss the genuineness of this song.

2. Translate literally Isaiah lvii, 1 to 10 inclusive.

(*a*) Explain fully the Masoretic note of verse 1, and generally the use of the main accents in poetry.

(*b*) Point out the difficulties of verse 2 on grammatical and lexical grounds.

(*c*) What is the usual form of יְלָדַי?

(*d*) Parse נֶחָמִים.

(*e*) Discuss the possible meanings of בְּחַלְקֵי in verse 6.

(*f*) Primary sense of גָּלָה.

(*g*) Parse נוֹאָשׁ.

3. Give some examples of words or forms of expression, used repeatedly in chaps. 40-66, but never in chaps. 1-39, and discuss the inference drawn from that fact.

4. How do you explain the naming of Cyrus in chap 44 : 28, and 45 : 1 ?

5. Make notes on Sargon and Sennacherib in their connection with the history of the Jews.

THE NEIL STEWART PRIZE.

GRAMMAR.

THURSDAY, MARCH 30TH :—2 TO 5 P. M.

1. *Vowels* :—

(*a*) Compare the Hebrew, Syriac and Arabic vowel systems.

(*b*) Meaning of the names given to the Hebrew vowels.

(*c*) Unchangeable vowels.

(*d*) By whom were the vowels inserted in the Old Testament ?

2. *Pronouns* :—

(*a*) Compare the Hebrew, Chaldee, Syriac and Arabic personal pronouns.

(*b*) Forms taken by the 3rd masc. sing. personal pronoun when suffixed to verbs and nouns.

3. *Verbs* :—

(*a*) Compare the Hebrew and Aramaic verbs as to stems and tenses.

(*b*) Why do the weak verbs in Hebrew differ from the strong verbs ?

(*c*) Characteristics of ע״ע, ע״ו, ל״ה and ל״א verbs, with examples.

(*d*) Inflect נגש in Kal imperfect, Hiphil perfect and Hophal participle.

4. *Nouns* :—

(*a*) Give examples of Segholates and of their peculiarities.

(*b*) Inflect fully חֹזֶה.

5. *Syntax* :—

(*a*) In what cases may the perfect with Waw conjunctive be used instead of the imperfect with waw consecutive ?

(*b*) What state is usually denoted by the participle ?

(*c*) When is the accusative used with the passive verb ?

(*d*) Various constructions of the numerals from *one* to *ten*.

6. *Write in Hebrew* :—

In the year one thousand and eight hundred and ninety nine, in the month of March-April, in the thirtieth day of the month.

MENTAL AND MORAL PHILOSOPHY.

INTERMEDIATE EXAMINATIONS.

FORMAL LOGIC.

FRIDAY, APRIL 14TH:—MORNING, 9 TO 12.

(N.B.—*Question 7 must be attempted by all.*)

1. State clearly, in one paragraph, the nature, scope, and purpose of Deductive Logic.

2. Explain and illustrate: Connotation, Dichotomy, Property, Distribution.

3. Discuss fully the logical process (or processes) involved in the following assertions:—

(*a*) Water is not indicative of frogs, but frogs are indicative of water. (*Gœthe.*)

(*b*) Of course you couldn't be happy without being healthy; but it doesn't follow that you couldn't be healthy without being happy. (*Concerning Isabel Carnaby*, ch. XVII.).

4. Give the logical opposites of each of the following:—

(*a*) A good king is a public servant.

(*b*) Those who suffer bravely save mankind.

(*c*) All muscles are not voluntary.

5. What is the Figure of a Syllogism? Construct an original categorical syllogism (with terms) in *any* mood of the Third Figure, and reduce it by Direct Reduction.

6. Explain and illustrate: Modus Tollens and the corresponding fallacy, Ambiguous Middle, Post hoc ergo propter hoc, Argumentum ad hominem.

7. Examine the following examples of logical processes:

(*a*) "Were it Crime, I should feel Remorse. Where there is no remorse, crime cannot exist. I am not sorry; therefore I am innocent. Is the proposition a fair one?"

The excellent doctor admitted that it was not to be contested.

Thackeray.

(*b*) Swift is praised as the friend to liberty. He was not that: he was the enemy of injustice. He resisted certain flagrant acts of oppression, and tried to redress his country's wrongs, but he never thought of the liberties of his country.

H. Crabb Robinson.

(*c*) A prince without letters is a pilot without eyes. All his government is groping. In sovereignty it is a most happy thing not to be compelled; but so it is the most miserable not to be counselled. And how can he be counselled that cannot see to read the best counsellors (which are books); for they neither flatter us nor hide from us?

Ben Jonson.

(*d*) If a general is permitted to lead whole regiments to slaughter for the honour of the country, it is mere prejudice which forbids a great *savant* to sacrifice a few existences for a magnificent discovery, such as that of the virus of rabies or of diphtheria ..... Why should we not admit the existence of other battle fields than those on which death is encountered for the caprice of a ruler or the aggrandisement of a country?..... Why should there not be glorious engagements in which defeat would be inflicted on the scourges that depopulate the world?

François de Curel.

THIRD YEAR EXAMINATION.

MURRAY'S HANDBOOK OF PSYCHOLOGY, BOOK II, PART I.

THURSDAY, APRIL 13TH:—MORNING, 9 TO 12.

Examiner.....J. CLARK MURRAY, LL.D.

(*Answer only eight questions.*)

1. Compare tastes and odours in regard to (*a*) their associability, (*b*) their comparability.

2. Give some account *either* of the perceptions of touch, *or* of the perceptions of hearing.

3. Show that, by the very nature of seeing, the magnitude and figure and distance of objects cannot be perceived through the sense of sight alone.

4. Give some account of observations made on persons born blind and afterwards restored to sight.

5. Explain fully why objects appear to sight sometimes larger, sometimes smaller than they really are, illustrating your explanation by examples.

6. Explain fully the nature of abstraction.

7. Explain the psychological foundation of the logical rule which requires that a definition shall predicate of the subject defined its proximate genus and its differentia.

8. Distinguish the different ideals of intelligence.

9. Classify the fine arts, and describe more particularly the three visual arts both in their common characteristic and in their distinctive peculiarities.

10. What is meant by Associationism? Mention other names by which it is known, and contrast it with Idealism.

11. Explain fully what is meant by the relativity of knowledge, and point out its bearing on Materialism and Agnosticism.

12. Explain the causes from which hallucinations commonly arise.

B.A. EXAMINATIONS.

MURRAY'S INTRODUCTION TO ETHICS.

WEDNESDAY, APRIL 5TH:—MORNING, 9 TO 12.

Examiner,.....J. CLARK MURRAY, LL.D.

Answer only eight questions.

1. State *either* the empirical *or* the transcendental theory of the consciousness of moral obligation.

2. Describe the earlier forms of the idea of desert, and explain the form to which it ultimately evolves.

3. Distinguish the antagonistic theories on the freedom of the will.

4. Explain the different forms in which the problem of Ethics proper may be stated.

5. Explain the different special modifications of the general theory which makes pleasure the chief end of existence.

6. Discuss the question whether Utilitarianism may legitimately estimate pleasures by their quality as well as by their quantity.

7. State fully the four questions raised in the critique of Utilitarianism, and show that the last is the question by which every moral theory must be tested.

8. Give an outline of the discussion on any one of these four questions.

9. Sketch the ethical system of the ancient Stoics, and contrast it with the Ethics of Christianity.

10. Explain the ethical theory of Clarke *or* that of Wollaston.

11. Explain fully what Kant meant by "the categorical imperative."

12. Compare Ethics with other sciences in regard to the uncertainty of its ultimate principles.

B.A. EXAMINATIONS.

MURRAY'S INTRODUCTION TO ETHICS.

WEDNESDAY, APRIL 5TH :—AFTERNOON, 2 TO 5.

Examiner, ...J. CLARK MURRAY, LL.D.

Answer only six questions.

1. Distinguish social and personal duties. Name any other kinds of duty sometimes co-ordinated with these, and discuss the place which they ought to occupy in a philosophical classification.

2. Distinguish determinate and indeterminate obligations, showing which represents the higher evolution of social morality.

3. What is meant by a *right?* Distinguish personal and real rights, and show how the latter grow out of the former.

4. Explain fully the sense in which Society may be described as an organism, and distinguish the forms of Society that are essential to human life.

5. Trace the historical evolution of justice in reference to physical life.

6. Explain the part played by occupancy, by labour and by contract in originating real rights; *or*, discuss the economical law of supply and demand in its moral aspect.

7. Distinguish (*a*) virtue from duty, (*b*) the three aspects of virtue.

8. Show how the moral consciousness passes over into the religious consciousness.

9 In what sense may you apply to emotional culture the doctrine of Aristotle, which makes virtue a mean between two extremes.

10. Explain the nature of the specific discipline required to train the will in positive as well as negative virtue.

THIRD YEAR EXAMINATIONS.

HONOURS IN MENTAL AND MORAL PHILOSOPHY, GREEK PHILOSOPHY, AND PLATO'S THEÆTETUS.

FRIDAY, APRIL 7:—MORNING, 9 TO 12

Examiner, ... J. CLARK MURRAY, LL.D.

Answer the last three questions, and only four of the others.

1. Describe the circumstances of time and of place amid which Greek Philosophy originated.

2. Give an account of any one of the schools which belong to the first period of Greek Philosophy.

3. Sketch the distinctive teaching *either* of the philosopher with whom the second period began *or* of the Sophists.

4. Describe the peculiar method of the teaching of Socrates.

5. Give a brief account *either* of the Megaric School *or* of the Dialectic of Plato.

6. Explain fully Aristotle's doctrine of Cause *or* give a sketch of his Ethics.

7. Contrast the ethical systems of the Stoics and the Epicureans.

8. What is the question discussed in the *Thæætetus?* How does Theætetus misunderstand the question at first? How does Socrates correct the misunderstanding?

9. Explain the first answer given to the question and give a simple statement of the main objections urged against it.

10. Give a brief outline of the discussion on *either* of the other two answers.

THIRD YEAR HONOURS IN MENTAL AND MORAL PHILOSOPHY, 1899.

LOGIC.

TUESDAY, APRIL 18TH:—MORNING, 9 TO 12.

1. What, according to Mill, is the function of Abstraction as subsidiary to Induction?

2. State clearly the difference between Natural and Artificial classifications; and illustrate with original examples.

3. Write short notes on: Question-begging names, Fallacies of Non observation, False Analogy.

4. Explain fully the distinction drawn by Venn between the popular view of Causation, and the same view as rendered more precise by logicians.

5. Discuss carefully the philosophical meaning of *Explanation*, and give an original and comprehensive example of its use.

6. Examine, with some detail, any *one* type of serviceable Hypothesis, and apply the principles to a concrete instance of your own selection.

THIRD YEAR EXAMINATIONS.

HONOURS IN MENTAL AND MORAL PHILOSOPHY.

JAMES' PRINCIPLES OF PSYCHOLOGY AND FRASER'S SELECTIONS FROM BERKELEY.

THURSDAY, APRIL 20TH:—AFTERNOON, 2 TO 5.

Examiner,.....J. CLARKE MURRAY, LL.D.

(*Answer only five questions from A, and three from B.*)

A.

1. Distinguish the different selves, *or* state the different theories of self-consciousness.

2. Describe the varieties of attention, *or* its various effects.

3. Give an outline of James' Critique of Nominalism, *or* explain what he means by saying that conceptions are unchangeable.

4. What are the conditions of discrimination, and the causes that tend to improve discrimination by practice?

5. How is association called into play in voluntary recollection?

6. "A succession of feelings, in and of itself, is not a feeling of succession." Explain.

7. To what extent is the power of memory unchangeable; to what extent may it be improved?

B.

1. Discuss Berkeley's theory of abstract general ideas.

2. Connect this theory with the doctrine maintained in "The Principles of Human Knowledge."

3. "First, it will be objected that all that is real and substantial in nature is banished out of the world .....Fourthly, it will be objected that things are every moment annihilated and created anew." Give Berkeley's answer to these objections.

4. Contrast Berkeley's new theory of vision with the old theories which he seeks to displace.

5. Explain Berkeley's theory that visible nature forms a language spoken to us by the Creator.

B. A EXAMINATIONS.

HONOURS IN MENTAL AND MORAL PHILOSOPHY.

HISTORY OF MODERN PHILOSOPHY.

THURSDAY, MARCH 30TH :—MORNING, 9 TO 12.

Examiners, ... { J. CLARK MURRAY, LL.D. / P. T. LAFLEUR, M.A.

Answer A and B in separate books.

A.

1. Give some account of the influence of physical science in expanding the conception of the universe at the opening of Modern History.

2. Give an outline of the philosophy of Descartes.

3. Sketch the philosophy of Leibnitz, *or* give some account of Wolff and the Wolffian School.

4. Give an account of Locke's Essay on the Human Understanding, *or* sketch the Ethics and Politics of Hobbes.

B.

1. Explain carefully the materialism of Hartley and Priestley, and show in what directions it is philosophically weak. Distinguish, if you can, between this form of materialism and any other doctrine, whether of earlier or of later date, going by the same name.

2. Examine and discuss the fundamental principles of Godwin's *Political Justice*, with particular reference to its filiation with the teachings of Rousseau.

3. What is meant by the following expressions:—the secularization of politics, "The French Revolution is a schism with the whole universe" (Burke), the Physiocrats, the Mercantile Theory of Economies.

4. Give a succinct account of Utilitarianism as expounded and maintained by Bentham; and discuss his application of its principles and method to any *one* department of practical affairs.

B.A. EXAMINATIONS.

HONOURS IN MENTAL AND MORAL PHILOSOPHY.

THE PHILOSOPHY OF KANT.

SATURDAY, 1ST APRIL:—MORNING, 9 TO 12.

Examiner, ... J. CLARK MURRAY, LL.D.

Answer only six questions.

1. Explain fully the question in which Kant sums up the problem of Pure Reason.

2. Give a brief outline of the Transcendental Aesthetic.

3. Give the table of the Categories, showing its relation to the classification of judgments.

4. Sketch the transcendental deduction of the Categories, *or* explain the Schematism of Pure Understanding.

5. Write a note on any of the Principles of Pure Understanding.

6. Explain the Ideas of Pure Reason, showing how they are formed.

7. Give a brief explanation of the Antinomy of Pure Reason and indicate how the several Antinomies are solved.

8. Give the gist of Kant's criticism of the physico-theological argument for the existence of God.

9. Explain the Antinomy of Practical Reason, and the solution proposed by Kant.

B.A. EXAMINATIONS.

HONOURS IN MENTAL AND MORAL PHILOSOPHY.

ARISTOTLE'S NICOMACHEAN ETHICS.

MONDAY, APRIL 3RD:—AFTERNOON, 2 TO 5.

Examiner, ... J. CLARK MURRAY, LL.D.

Answer only seven questions.

1. What is the Good? How far do all men agree, how far do they differ, on the question?

2. Explain the principle on which Aristotle bases his classification of the virtues.

3. Define ethical virtue, explaining the definition and illustrating it by an example.

4. In what sense does the definition apply to justice?

5. Distinguish the narrower and the wider meanings of justice.

6. Discuss either of the questions :— (*a*) Can a man be unjust to himself? (*b*) Is it worse to inflict or to suffer injustice?

7. Distinguish the dianoetic (intellectual) virtues.

8. Distinguish the different kinds of friendship and the different kinds of self-love.

9. Explain the influence of different kinds of government upon friendship.

10. Give Aristotle's critique of the doctrine of Eudoxus on the Chief Good, *or* state fully Aristotle's own doctrine.

B. A. EXAMINATIONS.

HONOURS IN MENTAL AND MORAL PHILOSOPHY.

MAINE'S ANCIENT LAW.

SATURDAY, APRIL 8TH :—AFTERNOON, 2 TO 5.

Examiner,.....J. CLARK MURRAY, LL.D.

1. Explain the primitive conception of Themis and Themistes.

2. Describe the jural condition of primitive society.

3. How is that condition illustrated by the Roman *Patria Potestas*?

4. What was the origin of the philosophical doctrine of a Law of Nature?

5. Explain the form which this doctrine took among the ancient Roman jurists, *or* sketch its development in modern times.

6. Connect the origin of property and of testamentary succession with the jural condition of primitive society.

7. Sketch the early history *either* of contract *or* of criminal law.

8. Explain the prominence of jural ideas in Latin, as contrasted with Greek Theology.

B. A. EXAMINATIONS.

HONOURS IN MENTAL AND MORAL PHILOSOPHY.

SPINOZA'S ETHICS.

THURSDAY, 13TH APRIL :—MORNING, 9 TO 12.

Examiner, ... J. CLARK MURRAY, LL.D.

1. Give the definitions of Causa sui, Res finita, Substantia, Attributum, Modus, Deus, Res libera et res necessaria, Aeternitas.

2. How does Spinoza demonstrate the unity of substance, and identify substance with God ?

3. "Res particulares nihil sunt nisi Dei attributorum affectiones," (I. 25, Cor.). Explain fully.

4. Explain Spinoza's conception of the human mind and body, as developed in Part II.

5. Give the definitions of Causa adaequata et causa inadaequata, Actio et passio, Affectus ; and distinguish the Affectus primitivi.

6. Explain the method by which Spinoza inculcates the control of passion.

7. Explain the relation of action, virtue, the third kind of knowledge, and the intellectual love of God.

B.A. EXAMINATIONS.

HONOURS IN MENTAL AND MORAL PHILOSOPHY.

ZELLER'S STOICS, EPICUREANS AND SCEPTICS.

SATURDAY, APRIL 15TH :—MORNING, 9 TO 12.

Examiner, ... J. CLARK MURRAY, LL.D.

Answer only eight questions.

1. Describe the political and intellectual influences at work in forming the post Aristotelian philosophy.

2. Explain the Stoical theory of knowledge.

3. In what sense were the Stoics materialists, in what sense pantheists ?

4. Give an outline of the abstract theory of morals held by the Stoics.

5. Indicate how their theory was modified in practice.

6. How did the Stoics interpret the myths of the popular religion ?

7. Give a sketch of the Epicurean School.

8. Give an outline of the Epicurean Canonic.

9. Give an account of the atomic theory of the Epicureans *or* of their theology.

10. Explain fully the Epicurean conception of the highest good.

11. Sketch the teaching of Pyrrho.

12. Give an account of either of the two chief representatives of the New Academy.

B.A. EXAMINATIONS, 1899.

HONOURS IN MENTAL AND MORAL PHILOSOPHY.

JAMES' PRINCIPLES OF PSYCHOLOGY, VOL. II.

THURSDAY, APRIL 20TH, 1899 :—AFTERNOON, 2 TO 5.

Examiner..... J. CLARK MURRAY, LL.D.

(*Answer only eight Questions.*)

1. Distinguish the psychological and physiological theories to account for the effect of contrast.

2. Discuss the relations between imagination and sensation, *or* compare sensation and perception.

3. Give a brief account of James' theory of the perception of space.

4. Explain the influence of emotion and active impulse upon belief.

5. What is the most elementary single difference between the human and the brute mind ? Connect this with the essential characteristic of genius, and distinguish two orders of genius.

6. Describe some of the effects of sensation in exciting movement.

7. Define instinct, and illustrate the absence of uniformity in instincts

8. Discuss James' theory of the emotions.

9. Write a note on ideo-motor action, *or* the "pleasure-and-pain theory" of the springs of action

10. Distinguish the different theories about the hypnotic state.

11. Distinguish two ways in which brain-structure may originate.

12. Write a note on the genesis of the elementary categories.

B. A. HONOURS IN MENTAL AND MORAL PHILOSOPHY.

SPENCER AND MILL.

SATURDAY, 22ND APRIL :—MORNING, 9 TO 12.

1. Discuss fully *either* Spencer's interpretation of "The Relativity of Knowledge," *or* "The Reconciliation."

2. Write notes on :—Equilibration, Segregation, The Rhythm of Motion, the Instability of the Homogeneous. Illustrate, if possible, with original examples.

3. Distinguish carefully between Simple and Compound Evdution.

4. Apply Spencer's conception of Evolution to an exanple of your own selection.

5. Summarize Mill's explanation of the question of liberty and necessity; and discuss independently from your own point of view its bearing on moral judgment and conduct.

6. State fully and clearly Mill's philosophical attitude towards social problems, and the nature of the method of investgation which he advocates.

B. A. EXAMINATIONS.

HONOURS IN MENTAL AND MORAL PHILOSOPHY.

WATSON'S OUTLINE.

MONDAY APRIL 24TH :—MORNING, 9 TO 12.

Examiner,.....J. CLARK MURRAY, LL.D.

Answer only six Questions.

1. Explain Mill's theory that Mathematics is (*a*) not an exact science, (*b*) not a necessary science.

2. Give a brief outline of Watson's critique *either* in regard to Geometry *or* in regard to Arithmetic and Algebra.

3. Explain Comte's law of the three stages of intellectual developnent.

4. Discuss the question, whether natural selection is incompatille with a philosophical conception of teleology.

5. Criticise Spencer's absolute opposition of subject and object.

6. Show that the contrast between the ideal and the actual self is not absolute.

7. Criticise Kant's doctrine with regard to the postulates of practical reason.

8. Write a note *either* on the Philosophy of Religion *or* on the Philosophy of Art.

MATHEMATICS AND NATURAL PHILOSOPHY.

SESSIONAL EXAMINATIONS.

FIRST YEAR.

GEOMETRY AND ARITHMETIC.

TUESDAY, APRIL 11TH, 1899:—MORNING, 9 TO 12.

(Write the answers in separate books marked A, B, C, respectively, to correspond to the questions.)

A

1. Find a third proportional to two given right lines.

(*a*) If a triangle be constructed with the sum of the first and third lines at its base, and the second line as the perpendicular to the base from the point of junction of the first and third, prove that it is a right-angled triangle.

2. Describe a regular pentagon which shall be equal to a given square.

3. Equal chords in a circle are equidistant from the centre.

(*a*) If two equal chords of a circle intersect, prove that the segments of the one are equal respectively to the segments of the other.

4. Snow is uniformly distributed to the depth of 2 feet 9 inches on a flat roof which is 20 feet 6 inches long by 18 feet 3 inches wide, find the pressure on each square foot of the roof, and the pressure on the whole roof, if 10 cubic inches of snow when melted give one cubic inch of water, and a cubic foot of water weighs $62\frac{1}{2}$ lbs.

B

5. In equal circles the chords, which cut off equal arcs, are equal.

(*a*) If two chords of a circle are parallel, they intercept equal arcs.

6. If a straight line touch a circle and from the point of contact a chord be drawn, the angles which this chord makes with the tangent shall be equal to the angles in the alternate segments of the circle.

State and prove the converse proposition.

7. If the sides of two triangles, taken in order about each of their angles, be proportionals, the triangles shall be equiangular to one another, and shall have those angles equal which are opposite to the homologous sides.

8. A train 88 yards long overtook a man walking along the line at the rate of 4 miles an hour, and passed him in 10 seconds. Twenty minutes later the train overtook another man, and passed him in 9 seconds. When will the first man overtake the last?

C

9. The opposite angles of a quadrilateral inscribed in a circle are together equal to two right angles.

(*a*) If A B C is an isosceles triangle and a line be drawn parallel to the base, cutting A B and A C in X and Y, the points BC XY lie on a circle.

10. To inscribe a circle in a given triangle.

(*a*) Describe a circle touching one side of a triangle and the other two sides produced.

11. In equal circles, angles, whether at the centres or the circumferences, have the same ratio as the arcs upon which they stand.

12. Simplify $\dfrac{3\frac{1}{2} - 2\frac{1}{6}}{\frac{1}{4}(\frac{1}{5} + \frac{1}{7})} \div 15\frac{5}{2}$

FIRST YEAR.

TRIGONOMETRY AND ALGEBRA.

WEDNESDAY, APRIL 12TH:—MORNING, 9 TO 11.

(Write the answers in separate books marked A, B, and C respectively, to correspond to the questions.)

A.

1. From the top and bottom of a cliff which is 200 feet high, the depressions of a ship at sea are observed to be 18° 21′ and 15° 28′, what is its distance in yards from the bottom of the cliff?

2. Find the angles of a triangle whose sides are 18.3, 27.1, and 21 feet long.

3. Solve the equations:

$$\frac{132x + 1}{3x + 1} \quad \frac{8x + 5}{x - 1} = 52$$

$$a + x + \sqrt{a^2 + bx + x^2} = b$$

4. Find the first hour after six o'clock at which the two hands of a watch are directly opposite.

B.

5. Prove the following relations:

(*a*) $\tan (45° - A) = \dfrac{1 - \tan A}{1 + \tan A}$.

(*b*) $\dfrac{1 + \cos A}{\sin A} = \cot \dfrac{A}{2}$.

(*b*) $\cos \dfrac{C}{2} = \sqrt{\dfrac{s(s-c)}{ab}}$.

(*d*) area of triangle $= \frac{1}{2} bc \sin A$.

6. Given, $a = 1$, $b = 1.32$, $C = 27° 32'$, find the angles A and B and side *c*.

7. Solve the following equations:

(*a*) $x + \sqrt{a^2 + x^2} = \dfrac{na^3}{\sqrt{a^2 + x^2}}$

(*b*) $\left.\begin{matrix} \sqrt[3]{x} + \sqrt[3]{y} = 3 \\ x + y = 9 \end{matrix}\right\}$

8. What are eggs a dozen, when two more in a shilling's worth lowers the price one penny per dozen?

C.

9. (*a*) Trace the changes in sign of the tangent of an angle as the angle increases from 0° to 360°.

(*b*) Trace the changes in the value of the tangent as the angle increases from 0° to 360°.

10. Prove: (*a*) $\cos Q - \cos P = 2 \sin \dfrac{P + Q}{2} \sin \dfrac{P - Q}{2}$.

(*b*) $\cos 2A = 1 - 2 \sin^2 \dfrac{A}{2}$

(*c*) $\tan^2 A - \tan^2 \beta = \dfrac{\sin (A + \beta) \sin (A - \beta)}{\cos^2 A \cos^2 \beta}$

(*d*) $\dfrac{a + b}{c} = \dfrac{\cos \dfrac{(A - B}{2}}{\cos \dfrac{(A + B)}{2}}$

11. Define a logarithm.

Prove :—(1) Log mn = Log m + Log n

(2) Log $\frac{m}{n}$ Log m — Log n

(3) Log m^n = n Log m

12. Solve the equations :

(1) $xy = 15$; $x - y = 2$

(2) $y + z = 2a$; $z + x = 2b$; $x + y = 2c$

(3) $x^3 y^3 = 98$. $x - y = 2$

INTERMEDIATE EXAMINATIONS.

GEOMETRY AND ARITHMETIC

TUESDAY, APRIL 11TH :—MORNING, 9 TO 12.

(Write the answers in separate books, marked A, B. C, respectively, to correspond to the questions.)

A

1. If two chords in a circle cut one another, the rectangle contained by the segments of the one shall be equal to the rectangle contained by the segments of the other.

2. If two triangles have one angle of the one equal to one angle of the other and the sides about the equal angles proportional, the triangles shall be similar.

3. To describe a rectilineal figure which shall be equal to one and similar to another rectilineal figure.

4. Find value of $\frac{(5\frac{5}{6} \text{ of } \frac{3}{2\frac{1}{5}}) + (3.\dot{3} \text{ of } 2) - 1\frac{1}{2}}{\frac{1}{17} \text{ of } (2.0\dot{4}\dot{5} - .5)}$ of £19 16s $7\frac{3}{4}$d.

B

5. The angle in a semicircle is a right angle ; the angle in a segment greater than a semicircle is less than a right angle ; and the angle in a segment less than a semicircle is greater than a right angle.

6. In a right angled triangle if a perpendicular be drawn from the right angle to the hypotenuse, the triangles on each side of it are similar to the whole triangle and to one another.

(*a*) Prove that the hypotenuse has to one side the same ratio as the other side has to the perpendicular.

7. From a given circle to cut off a segment which shall contain an angle equal to a given angle.

8. A watch is set at noon on Saturday : at 10.30 a.m. on Monday it had gained 3½ minutes ; what will be the correct time on Tuesday when the watch shows 3.30 p.m. ?

C

9. Equal chords in a circle are equidistant from the centre.

(*a*) If two equal chords in a circle intersect, prove that the segments of the one are equal respectively to the segments of the other.

10. Describe an isosceles triangle, each of whose base angles shall be double the vertical angle.

(*a*) If the length of each of the equal sides be M, show that the base is equal to $M\,\frac{(\sqrt{5}-1)}{2}$

11. Similar triangles are to one another in the duplicate ratio of their homologous sides.

12. A train 88 yds. long, overtook a man walking along the line at the rate of 4 miles an hour, and passed him him in 10 seconds. Twenty minutes later the train overtook another man, and passed him in 9 seconds. When will the first man overtake the last?

INTERMEDIATE EXAMINATION.

TRIGONOMETRY AND ALGEBRA.

WEDNESDAY, APRIL 12TH:—MORNING, 9 TO 12.

(*Write answers to Parts A, B and C in separate answer books*).

A.

1. Prove that in any triangle:

$$(1)\quad \frac{a+b}{c} = \frac{\cos\frac{(A-B)}{2}}{\cos\frac{(A+B)}{2}}$$

$$(2)\ \frac{a+b}{a-b} = \frac{\tan\frac{(A+B}{2}}{\tan\frac{(A-B}{2}}$$

2. Two objects in a fortified town are seen from a station at which they subtend an angle of 49°.25′; their distances from the station are known to be 1020 and 1680 feet respectively; what is the distance between the objects?

3. Solve the equations

(1) $3x + 2\sqrt{x} - 1 = 0$

(2) $\frac{x+3}{x+2} + \frac{x-3}{x-2} = \frac{2x-3}{x-1}$

(3) $x - y = 2;\ x^3 - y^3 = 98.$

4. Simplify (1) $\sqrt{10} + \sqrt[3]{10}$

(2) $\frac{3+\sqrt{5}}{3-\sqrt{5}}$,

Prove that

$$a^{\frac{p}{q}} = \sqrt[q]{a^p}$$

B.

5. Prove:

(1) $\cos A = \frac{b^2 + c^2 - a^2}{2bc}$

(2) $\cos\frac{A}{2} = \sqrt{\frac{s(s-a)}{bc}}$

(3) Area of a triangle $= \frac{1}{2} bc \sin A.$

6. Standing on the top of a mountain I observe that the angle which a pillar 220 ft. in height subtends at my eye is 1°. 12′ and the depression of its top is 12°. 20′; what is the distance of the pillar and the height of the mountain?

7. Simplify (*a*) $\dfrac{\left(\frac{b^2}{a^2+c^2} + \frac{c^2}{b^2-c^2}\right)(b^2+c^2)^2}{\frac{b}{b-c} - \frac{c}{b-c}}$

(*b*) $a^{\frac{3}{4}\left(\frac{4}{5}+\frac{5}{6}\right)} \div a^{\frac{4}{3}\left(\frac{5}{4}+\frac{6}{5}\right)}$

8. A court can be paved with 200 square tiles of a certain size or with 128 tiles one inch larger each way. Find the size of the tiles.

C.

9. Prove that $\log P^{\frac{m}{n}} = \frac{m}{n} \log P$. And find the fifth root of $\left(\frac{5}{9}\right)^2$

10. (*a*) Show that $\sin A = 1 - 2 \sin^2 \left(45° - \frac{A}{2}\right)$

(*b*) If in a triangle, $a = 2b$ and $A = 3B$, find the angles, and express c in terms of a.

11. Given $A = 30°$, $a = 200$ ft., $c = 250$ ft., show that there are two solutions, and find the area of the greater triangle.

12. (*a*) Given $xy = a$, $yz = b$, $zx = c$, solve the equation.

(*b*) The sum of the two sides of a right-angled triangle is 51, and the hypothenuse is greater than the longer side by 3. Find the sides.

THIRD YEAR.

MECHANICS.

WEDNESDAY, APRIL 5TH:—MORNING, 9 TO 12.

(*Answers to division B must be written in a separate book.*)

A.

1. A mass of 40 lbs. is resting on a rough horizontal plane and can just be moved by a force of 12 lbs. weight acting horizontally; find the coefficient of friction and the direction and magnitude of the resultant reaction of the plane.

2. Given that the unit of force is that force which will give 1 lb. an acceleration of 1 ft. per sec. in 1 sec. Deduce from the 2nd law of motion that

$$P = m f$$

(*a*) A 30-ton mass is moving on smooth horizontal rails at the rate of 20 miles per hour. What force would stop it in (1) half a minute and (2) in half a mile!

3. Find the H. P. of an engine which can travel at the rate of 25 miles per hour up an incline of 1 in 100, the mass of the engine and load being 20 tons and the resistances due to friction being 10 lbs. weight per ton.

4. A bullet is projected with a velocity of 640 feet per sec. at an angle of 30° with the horizontal, find (1) the greatest height attained, and (2) the range on a horizontal plane; (3) the time of flight.

5. If a plane surface be immersed in a liquid, the whole pressure on it is equal to $g \rho S \bar{z}$ where S is the area of the plane surface and $\bar{z}$ is the depth of its centre of gravity below the surface of the liquid.

(*a*) A cube each of whose edges is 2 ft. long has its lowest face just not touching the bottom of a vessel containing water 4 ft. deep. Find the total pressure on the cube.

6. Explain the action of the common pump.

B.

7. State and prove Lami's theorem. (*a*) If three forces acting at a point are in equilibrium and they make angles of 60°, 150°, 150° with one another, in what proportions are the forces?

8. Why is the upward pressure on a body equal to the weight of fluid displaced?

(*a*) A Nicolson's hydrometer when loaded with 250 grains in the upper pan sinks to the marked point in water; a stone is placed in the upper pan and the weight required to sink it to the same point is 75 grains: the stone is then placed in the lower pan and the weight required is 128 grains; find the Sp. Gr. of the stone.

9. When the water barometer stands at 33 ft., a bubble of air at a depth of 10 ft. from the surface of water has a volume of 3 cub. ins. At what depth will its volume be 2 cub. ins?

THIRD YEAR ORDINARY EXAMINATIONS, 1899.

ASTRONOMY AND OPTICS.

WEDNESDAY, APRIL 12TH:—MORNING, 9 TO 12.

(The answers to sections A, B and C must be written in separate books, marked A, B and C, respectively.)

A.

1. Explain the phases of the Moon.

2. Explain the causes of the seasons.

3. Define the terms *Ecliptic, Perihelion, First point of Aries, Tropical Year.* A tropical year contains $365\frac{1}{4}$ solar days nearly; shew that it contains nearly $366\frac{1}{4}$ sidereal days.

4. What evidence have we that the earth was originally in a fluid state? Explain fully.

B.

5. "In the production of winds and clouds, on the earth treated as a whole we find the greatest regularity." Explain what is meant, and account for the phenomena.

6. Shew that in its path round the sun the apparent motion of a planet will be partly direct and partly retrograde, with two stationary points between.

7. Assuming the refractive index of water to be $\frac{4}{3}$, calculate the real depth of a river which seems to be 10 feet deep.

8. Explain what takes place when light from a distant object enters the eye of a short sighted person; and determine the focal length and kind of spectacles required by a person who can see small print most distinctly at a distance of 75 centimetres.

C.

9. State the laws of *reflection* and *refraction* of light; and describe briefly an experimental proof of each. Explain what is meant by *total reflection, critical angle, dispersion, achromatism.* If the refractive index of quartz is 1.548, what is the value of the critical angle?

10. Prove the formula $\frac{1}{D} + \frac{1}{d} = \frac{1}{f}$ for a concave spherical mirror.

At what distance from a concave mirror of 1 ft. radius must an object be placed, that a real image may be formed of twice the linear dimensions of the object?

11. Assuming the formula for a thin convexo-concave lens;

$$\frac{1}{f} = (\mu - 1)\left(\frac{1}{r} - \frac{1}{r'}\right);$$

Calculate the curvature of the second surface of a double concave lens of flint glass, in order that it may form an achromatic combination with an equi-convex lens of crown glass of 20 in. radius; the first surface of the double concave being ground to the same curvature as the convex.

Take index of refraction of crown glass = 1.547
" " " flint " = 1.609
" dispersive power of crown " = 0.036
" " " flint " = 0.048

12. *Either*, (*a*) shew that after reflection at the surfaces of two plane mirrors inclined at an angle a, that a ray of light is deviated through $2a$; and how this principle is made use of in a sextant, giving a sketch of the instrument; *or* (*b*) describe the astronomical telescope, giving a sketch of the manner in which the image of a distant object is seen in it by the eye, and find the magnifying power of the instrument.

B.A. ORDINARY.

MECHANICS.

TUESDAY, 11TH APRIL:—MORNING, 9 TO 12.

(*Answers to division B must be written in a separate book.*)

A.

1. A lever 1 yard long has weights of 6 lbs. and 20 lbs. fastened to its ends, and balances about a point 9 inches distant from one end; find its weight.

2. Find the acceleration produced when a force of 5 poundals acts on a mass of 10 lbs.

(*a*) What force would be required to bring this body to rest in 2 seconds after it had acquired a velocity of 56 feet per second?

3. The pressure in the water pipe at the basement of a building is 34 lbs weight to the square inch, and at the third floor it is 18 lbs. to the square inch; find the height of the third floor above the basement.

4. Describe a Nicolson's Hydrometer, and explain the method of finding the specific gravity of a solid body by it.

5. An engine of mass 50 tons can travel up an incline of 2 in 100 at the rate of 20 miles per hour. At what rate in H.P. is it working against

gravity? If the resistance due to friction is 20 lbs. per ton, at what rate would it have to work to make the same speed on the level?

6. A bullet is projected horizontally from the top of a tower 100 feet high with a velocity of 200 ft. per sec. Find (1) the time of flight, (2) the horizontal range, (3) the velocity when it hits the ground, in magnitude and direction.

7 State Boyle's Law.

The volume of a bladder full of air at atmospheric pressure is 500 cubic inches. What will be its volume at a depth of 100 ft. below the surface of the sea, the water barometer standing at 30 ft. and the specific gravity of sea water being 1.1?

B.

8. Show that the space S described in the nth second by a particle having an initial velocity u and a uniform acceleration f is given by the equation

$$S = u + \tfrac{1}{2}f(2n - 1)$$

(*a*) A body is moving with uniform acceleration; in the eighth and thirteenth seconds after starting it moves through $8\frac{1}{2}$ ft. and $7\frac{1}{2}$ ft. respectively; find its initial velocity and its acceleration.

9. A piece of glass weighs 47 grams in air, 22 grams in water, and 25.8 grams in alcohol. Find the specific gravity of the alcohol.

10. Water is poured into a U tube, the legs of which are 8 inches long, till they are half full. As much oil as possible is then poured into one of the legs. What length of the tube does it occupy, the specific gravity of the oil being $\frac{3}{4}$?

B.A. ORDINARY EXAMINATIONS.

WEDNESDAY, APRIL 12TH:—MORNING, 9 TO 12.

(The answers to sections A, B and C must be written in separate books, marked A, B, and C respectively.)

A.

1. Define latitude and longitude of a place on the earth; also latitude and longitude of a star. Prove that the latitude of a place is equal to the altitude of the pole.

2. Given the latitudes of two places on the same meridian, and the Zenith distances of the Moon at the same instant at the two places, shew that the distance of the Moon can be found, provided the radius of the earth is known.

3. Explain any one method of finding the longitude of a place. When it is 8 o'clock a.m. at Montreal, what is the hour at a place 90° east of Montreal?

4. Given a concave spherical mirror of 18 inches radius, if a bright wire 1 inch long be placed at right angles to the axis at a distance of 8 inches from the mirror, find the position and magnitude of the image.

B

5. Describe the Moon's librations and their causes.

6. Define "Annual Parallax," and show how it is used to determine Jupiter's distance from the Sun.

7. Prove that for altitudes greater than 10° the atmospheric refraction is proportional to the tangent of the Zenith distance, and find the refraction for a star on the equator, the latitude being taken at 45° N.

8. Calculate in degrees, minutes and seconds the dispersion produced by a lens of diamond (dispersion power 0.038) whose focal length is $\frac{1}{30}$ of an inch and aperture $\frac{1}{10}$ of an inch.

C.

9. State the laws of *reflection* and *refraction* of light.

When the reflected and refracted rays into which an incident ray divides are at right angles, prove that the index of refraction is the tangent of the angle of incidence.

10. Prove that

$$\delta = (\mu - 1)\ \varepsilon$$

for a prism of small angle and the ray incident nearly perpendicularly.

Find the angle of a water prism which will produce a deviation equal to that produced by a glass prism whose angle is 34′.

Take $\mu = 1.336$ for water,

$\mu = 1.525$ for glass.

11. (*a*) Shew what is meant by the centre of a lens, and prove that an oblique ray passing through this point emerges parallel to itself.

(*b*) Prove that for pencils of small obliquity the formula

$$\frac{1}{d} - \frac{1}{D} = (\mu - 1)\left(\frac{1}{r} - \frac{1}{r'}\right)$$ holds good.

12. Describe the simple microscope, illustrating by a sketch the manner in which the image of a small subject is seen by the eye, and shew upon

what its magnifying power depends. Let the focal length of the object glass be $\frac{1}{5}$ inch, and of the eye glass $\frac{4}{5}$ inch, the object being placed in front of the object glass, at a distance from it exceeding its focal length by $\frac{3}{1000}^{ths}$ of an inch, and let the microscope be used by a person of average sight, or 10 in. distance of distinct vision.

Calculate the magnifying power and length of microscope.

FIRST YEAR.

PHYSICS.

FRIDAY, APRIL 14TH :—MORNING, 9 TO 12.

1. State Newton's second law of motion.

A force of 12 lbs. weight acts on a mass of 84 lbs. for 7 seconds. Find (1) the velocity acquired, (2) the distance run, (3) the *momentum*, (4) the *energy*, of the mass at the end.

2. *Either* (*a*) describe Atwood's Machine, *or* (*b*) shew how to determine the value of gravity by means of a simple pendulum.

3. Describe the mercury barometer, and explain exactly how it measures the pressure of the atmosphere.

4. Mention the principal effects produced by heat, and show how any *one* of them may be used to measure temperature.

5. State the laws according to which the volume of a gas varies (1) with change of pressure, (2) with change of temperature.

1,200 cub. ins. of gas at a pressure of 60 inches of mercury, and temperature 27° centigrade are brought to 30 inches pressure and 2° temperature. What is the new volume?

6. State briefly what you know of the disturbances constituting (*a*) Sound, (*b*) Light, (*c*) Plane Polarized Light.

7. Describe the Astronomical Telescope.

How would you determine (1) the magnifying power of a telescope, *or* (2) the focal length of a concave mirror?

8. How does the spectrum of an incandescent gas differ from that of a lime light, and from the Solar Spectrum? How do you account for the latter?

9. Describe some form of Galvanometer.

10. Distinguish between the magnetic properties of steel and soft iron. How would you make an electro-magnet?

11. Briefly describe the important parts, and the principle of the action of a dynamo for producing direct currents.

12. On what does the electrical resistance of a conductor depend? State Ohm's Law.

The lighting circuit at 100 volts is found to send a current of .48 ampere through a lamp. What is the resistance of the lamp?

THIRD YEAR ARTS, SECOND YEAR APPLIED SCIENCE.

EXPERIMENTAL PHYSICS.

SOUND, HEAT AND LIGHT.

FRIDAY, APRIL 7TH:—MORNING, 9 TO 12.

(*Not more than nine questions to be attempted.*)

1. What are the advantages of mercury as a thermometric substance?

A thermometer reads 100.5° in steam on a day when water boils at 100.39°; and — ·8° in melting ice. What is the true temperature when it reads 60°? Explain how a correction can be made for stem exposure.

2. Describe the weight thermometer, and explain how by means of it to determine the coefficient of cubical expansion of a liquid, assuming that of glass known.

3. If 4490 cc of a gas at 101° under a pressure of 75.4 cm of mercury, have its pressure increased to 82.1 cm and its temperature raised to 225°, what will be its new volume?

4. Explain clearly what is meant by the statement that the *total heat* of evaporation of water is 606.5 + .305t.

Steam at 100° is passed into 120 gms of water at 10° till the temperature rises to 35°. How much has the mass of the water increased?

5. 45.1 gms of copper at 99.6° was immersed in 52.5 gms of water at 10°. The temperature of the water rose to 16.8°. What is the specific heat of copper?

6. What is an Indicator Diagram? Show that the area of the curve represents the work done during a stroke of the engine.

7. What is meant by reversible engine? Show that no engine can be more efficient than a reversible engine (*a*) according to Carnot's view of heat, (*b*) according to the Dynamical Theory.

8. Define *frequency, phase, wave-length,* and show how the velocity of a wave is connected with its wave-length and frequency.

How may the velocity of sound be determined by a resonance tube and a fork giving a known number of vibrations?

9. Give the formula for the number of vibrations per second in a stretched string.

The length of the *e* string of a violin is 33 cm, and it has a mass of 0.125 gm. Show that its tension when tuned to 640 vibrations per second is 6890 gms. (1 gm wt = 981 dynes.)

10. Describe a spectroscope and the method of adjusting it.

Explain how the shifting of the bright lines in the spectra of certain stars has been utilized to determine their velocity in the line of sight.

11. Describe a method of determining *either* (*a*) the angle and refractive index of a prism, or (*b*) the focal lengths of a convex lens, and a concave mirror.

12. Describe and explain the phenomena of Newton's Rings.

FOURTH YEAR ARTS, THIRD YEAR APPLIED SCIENCE.

EXPERIMENTAL PHYSICS—ELECTRICITY AND MAGNETISM.

FRIDAY, APRIL 7TH:—MORNING, 9 TO 12.

(Not more than nine questions to be attempted).

1. Define the pole strength and magnetic moment of a magnet. Show how the magnetic moment of a magnet can be determined, given the horizontal component of the earth's magnetism. What assumption is generally made in regard to the position of the poles of a magnet?

2. Compare the action of a long solenoid conveying a current with a magnet. Draw the lines of force in both cases.

A solenoid 50 cms in length is uniformly wound with 500 turns of wire and a current of .5 amperes passed through it. Find the strength of the field at the centre of the solenoid.

3. Describe the relation between the magnetizing force and the total induction produced in a specimen of soft iron. Give approximate numerical values if possible. What is meant by magnetic hysteresis? How does Ewing's theory of magnetism account for the phenomena?

4. Explain the construction and action of a D'Arsonval galvanometer. What are the advantages of the D'Arsonval galvanometer compared with the Thomson mirror galvanometer?

5. Show how to find the reduction factor of a tangent galvanometer by means of a copper voltameter, and explain the precautions to be observed in practice.

A current was sent through a tangent galvanometer in series with a voltameter for 30 minutes. The deflection on the galvanometer was kept steady at 30°, and the amount of copper deposited was found to be .1 grammes; find the reduction factor of the galvanometer. The electrochemical equivalent of copper is .000328.

6. A battery of 50 accumulators (of negligible resistance), each cell 2 volts, is used for lighting 50 16 c. p. lamps arranged in parallel. Each lamp takes .6 amperes. Find the resistance of each lamp, and the total resistance in the circuit; find also the horsepower at which the battery is working.

7. A coil of wire whose terminals are connected to a galvanometer is rotated uniformly on a vertical axis in the earth's field. Explain what happens during one complete revolution. Given the number of turns on the coil, the strength of the field, and the speed of rotation, find the induced E.M.F. for different positions of the coil.

8. Describe Faraday's ice pail experiment. What deductions can be drawn from it?

9. Show that the capacity of an air condenser of two concentric metal spheres, radii a and b, is $\frac{a\,b}{b-a}$. Deduce from this the capacity of two large flat plates of area A, distant d apart. How is the capacity affected by the introduction of a dielectric like glass between the plates?

10. Explain the phenomena that occur when an electrical discharge is sent through a vacuum tube at various pressures. What are the Kathode rays, and what are their properties?

11. Explain the action (1) of a receiver of a modern telephone; (2) of a microphone.

12. On what does the economic transmission of power to great distances depend? Illustrate your answer, if possible, by a numerical example.

A 1,000 volt dynamo drives a distant motor. The current in the circuit is 10 amperes, and the total resistance of the circuit is 20 ohms. Find the efficiency of transmission, and the heat losses in the circuit.

FIRST YEAR ADVANCED SECTION EXAMINATIONS.

GEOMETRY (*First Paper*).

WEDNESDAY, APRIL 19TH:—MORNING, 9 TO 12.

1. Through one of the points of intersection of two given circles, draw a line, the sum of whose segments intercepted by the circles shall be a maximum.

2. If from any point perpendiculars be let fall on the sides of a regular polygon of n sides, their sum is equal to n times the radius of the inscribed circle.

3. If A, B, C, D be any system of n points, O their centre of mean position, P any other point, the sum of the squares of the distances of the points A, B, C, etc., from P exceeds the sum of the squares of their distances from O by $n\ OP^2$.

4. The middle points of the three diagonals of a complete quadrilateral are collinear.

5. If two triangles on equal bases and between the same parallels have their sides cut by another parallel line, the intercepts on this last line made by the sides of each triangle shall be equal.

6. Three times the sum of the squares of the sides of a triangle is equal to four times the sum of the squares of the lines bisecting the sides of the triangle.

B.

7. The bisectors of the internal and external vertical angles of a triangle produced meet the circumscribed circle in the middle points of the arcs of the segments into which the base divides the circle, and the line joining these points is the diameter which bisects the base at right angles.

8. If perpendiculars be drawn from any point on the circumference of a circle to the sides of an inscribed triangle, the feet are in the same straight line.

9. If a quadrilateral be not circumscribable by a circle, the rectangle under its diagonals is less than the sum of the rectangles under its opposite sides.

10. Draw a common tangent to two given circles.

11. In any triangle the rectangle under the sides is equal to the rectangle under the perpendicular from the vertex on the base and the diameter of the circumscribing circle.

FIRST YEAR—ADVANCED SECTION EXAMINATIONS.

GEOMETRY (*Second Paper*).

WEDNESDAY, APRIL 19TH :—AFTERNOON, 2 TO 5.

1. Explain the principle of *Inversion*. Prove that, if two circles intersect each other, their angle of intersection is equal to the angle of intersection of their inverses.

2. Any four fixed tangents to a circle are cut by any fifth variable tangent in four points whose anharmonic ratio is constant.

(*a*) Reciprocate this theorem.

3. Given two circles, describe a system of circles Co-axal with them.

4. Any line cutting a circle, and passing through a fixed point, is cuharmonically by the circle, the point and the polar of the point.

5. Given the base of a triangle, the perpendicular, and the sum of the sides; construct it.

6. The line joining the intersection of two opposite sides of a quadrilateral with the intersection of its diagonals forms with the third diagonal a pair of rays, which are harmonic conjugates with these sides.

B

7. If any transversal cut a pencil of four rays, the ratio of the rectangle under the whole transversal and its middle segment to the rectangle under its extreme segments is constant.

8. Any three straight lines drawn through the angles of a triangle so as to intersect in the same point divide the opposite sides into

segments, such that the segments of any side are in a ratio compounded of the ratios of the other two sides.

9. Two vertices of a triangle move on fixed straight lines, and the three sides pass through three fixed points, which lie on a straight line; find the locus of the third vertex.

10. Give six points on the circumference of a circle; find a seventh point on the circumference, such that the anharmonic ratio of it and three points taken in an assigned order shall be equal to the anharmonic ratio of it and the other three points taken in an assigned order.

11. Describe a circle touching three given circles.

ADVANCED SECTION EXAMINATION.

FIRST YEAR.

THEORY OF EQUATIONS—ALGEBRA.

FRIDAY, APRIL 21ST:—MORNING, 9 TO 12.

1. Transform the equation

$$x^3 - 4x^2 + \frac{x}{4} - \frac{1}{9} = 0$$

into another with integral coefficients and unity for the coefficient of the first term.

2. Find the equation whose roots are the squares of the roots of

$$x^4 + x^3 + 2x^2 + x + 1 = 0$$

3. In passing continuously from a value $a-h$ of x, a little less than a real root a of the equation $f(x) = 0$ to a value $a+h$, a little greater, the polynomials $f(x)$ and $f^1(x)$ have unlike signs immediately before the passage through the root and like signs immediately after.

4. Resolve $\dfrac{42-19x}{(x^2+1)(x-4)}$ into partial fractions.

5. Find how many permutations can be made out of the word triangle.

6. Find the sum of the series

$$1 \times 2 + 2 \times 3 + 3 \times 4 + \ldots + n(n+1).$$

B.

7. Any equation of an odd degree has at least one real root of a sign opposite to that of the last term.

Every equation of an even degree, whose last term is negative, has at least two real roots, one positive and one negative.

8. Solve the equation $x^3 - 9x^2 + 14x + 24 = 0$, two of whose roots are in the ratio of 3 to 2.

9. If in any equation such coefficient be taken positively, and divided by the sum of all the positive coefficients which precede it, the greatest quotient thus formed increased by unity is a superior limit of the positive roots.

10. State and prove Sturm Theorem.

Find the number and situation of the real roots of the equation

$$x^3 - 7x + 7 = 0$$

11. How many arrangements can be made by taking 5 of the letters of the word *equation?*

12. Prove $a^x = 1 + x \log a + \frac{x^2 (\log a)^2}{\underline{|2}} + \text{etc.}$

SECOND YEAR HONOUR EXAMINATION.

ANALYTIC GEOMETRY (*First Paper*).

WEDNESDAY, APRIL 19TH:—MORNING, 9 TO 12.

1. Find the equation of a circle in oblique co-ordinates, the origin being anywhere, and hence determine the conditions that the general equation of the second degree referred to oblique co-ordinates should represent a circle.

2. Prove by means of polar co-ordinates that if two chords of a circle intersect either inside or outside the circle, the rectangles under their segments are equal.

3. Given the base of a triangle, and that one base angle is double the other, find the locus of the vertex.

4. Given the equation of right line

$(A x' + B y' + C) x + (A' x' + B' y' + C') y + (A'' x + B'' y' + C'') = 0$

where $x'\ y'$ is a point lying on the right line $L x + M y + C = 0$. Prove that the given line will pass through a fixed point.

5. Prove analytically that if the middle points of the sides of any quadrilateral be joined by straight lines, the figure thus formed is a parallelogram.

(*a*) Prove that the area of the parallelogram is one-half of that of the quadrilateral.

6. If a circle be inscribed in a triangle, prove that the straight lines joining the vertices of the triangle to the points of contact of the sides are concurrent.

7. Find the equation of the polar with regard to a circle, of a given point outside the circle, and if p_1 and p_2 be the distances from the centre of the point and its polar, prove $p_1 \; p_2 = r^2$.

8. Show that

$$x^2 - xy - 2y^2 + 4x + y + 3 = 0$$

represents two right lines, and find the angle between them.

9. Find the equation of the line perpendicular to a given line and passing through a given point.

(*a*) Prove that the three perpendiculars of the triangle whose vertices are 3, 4; —2, 6; and 0, 0, are concurrent.

10. Find an expression for the area of the triangle formed by joining three given points.

11. Find the equation of a straight line in polar co-ordinates by transformation from the equation $ax + by + c = 0$.

12. Find the equation of the line joining the point 3, 4 to the intersection of the lines $2x - y + 1 = 0$ and $3x + 4y + 5 = 0$.

SECOND YEAR HONOUR EXAMINATIONS.

ANALYTIC GEOMETRY (*Second Paper*).

WEDNESDAY, APRIL 19TH:—AFTERNOON, 2 TO 5.

1. In any conic section the rectangles under the segments of two chords which intersect are to each other as the squares of the diameters parallel to those chords.

2. Given four points on a conic, the polar of any fixed point passes through a fixed point.

3. Find the equations of the tangent and normal to an ellipse at a given point.

(*a*) Find the lengths of the intercepts on the normal cut off by the axes, and show that the rectangle under them is equal to the square of the semi-diameter conjugate to that passing through the given point.

4. If any variable tangent to a central conic section meets two fixed parallel tangents, it will intercept portions on them whose rectangle is constant and equal to the square of the semi-diameter parallel to them.

5. The rectangle under the distances of any point on an ellipse from the two foci is equal to the square of the semi-diameter conjugate to that passing through the point.

6. In a parabola any tangent makes equal angles with the axis and with the focal radius vector.

7. Show how a given arc of a circle may be trisected by means of an hyperbola.

8. If the equation of a conic referred to oblique co-ordinates be

$$ax^2 + 2\,hxy + by^2 + 2\,gx = 0,$$

prove that the radius of curvature at the origin is equal to $\frac{-g}{b \sin \omega}$.

(*a*) Hence find the radius of curvature at any point of a central conic.

9. Use trilinear co-ordinates to prove that in a complete quadrilateral the line joining the intersection of the two ordinary diagonals to the intersection of two sides produced forms with the third diagonal and the two sides an harmonic pencil.

10. Express in trilinear co-ordinates the equation of the parallel to a given line $l\,\alpha + m\,\beta + n\,\gamma = 0$.

11. Prove that

$$\alpha\,\gamma = k\,\beta\,\delta$$

represents a conic circumscribing a given quadrilateral.

12. Find the locus of the centre of a circle which makes given intercepts on two given lines.

SECOND YEAR HONOUR EXAMINATIONS.

DIFFERENTIAL AND INTEGRAL CALCULUS.

FRIDAY, APRIL 21ST:—AFTERNOON, 2 TO 5.

1. Define differential and differential co-efficient, and give the ordinary notation for them. Investigate the differential coefficients of x^n, $\sin x$, $\log x$, e^x.

(*a*) Demonstrate the result for $\sin x$ geometrically.

2. Investigate the differential coefficient of the product of two functions of x.

3. If $u = f(z)$ and $z = \varphi(x)$

prove $\frac{du}{dx} = \frac{du}{dz} \cdot \frac{dz}{dx}$

(*a*) Differentiate $\log(\log x)$, $(1 + x^n)^m$.

4. In a triangle, if the vertical angle be regarded as infinitely small, the other angles remaining finite, prove that the difference of the sides is infinitely small in comparison with either of them.

5. Prove that the nth derived function of

$e^{ax} \cos bx$ is $(a^2 + b^2)^{\frac{n}{2}} e^{ax} \cos(bx + n\phi)$ where $\tan \phi = \frac{b}{a}$

6. Expand $\sin(x + y)$ by Taylor's Theorem, and hence find the expansions for $\sin x$ and $\cos x$ in terms of x.

7. Find the value of $(\sin x)^{\tan x}$ and of $\frac{n}{x} - \cot\left(\frac{x}{n}\right)$ when $x = 0$.

8. Find the least value of $a \tan\theta + b \cot\theta$.

(*a*) Prove the truth of your method.

9. Integrate

$$\int \frac{x^{n-1}\,dx}{a + b\,x^n} \quad : \quad \int \cos^2 x\,dx \quad : \quad \int \frac{x^3\,dx}{\sqrt{a^8 - x^8}}$$

10. Integrate

$$\int \frac{dx}{x^2 + x - 12} \quad : \quad \int \frac{dx}{x^2 + a^2} \quad : \quad \int \frac{dx}{\sin x}$$

11. Find the value of $\int_1^4 \frac{dx}{x^{\frac{3}{2}}}$

12. Integrate

$$\int e^x x^2 \, dx : \int \frac{dx}{\sin^4 x \cos^4 x} : \int \frac{dx}{\tan^3 x}$$

SECOND YEAR HONOUR EXAMINATIONS.

PLANE AND SPHERICAL TRIGONOMETRY.

SATURDAY, APRIL 22ND :—AFTERNOON, 2 TO 5

A.

1. The hypothenuse of a right angled spherical triangle is 50° and one of the sides is 44° 18′ 39″ find the remaining side.

2. Two sides of a spherical triangle are 84° 14′ 29″ and 44° 13′ 45″, the contained angle is 36° 45′ 28″, find the base angles.

3. Prove that

$$\tan^{-1}\left(\frac{\sqrt{2}+1}{\sqrt{2}-1}\right) - \tan^{-1}\frac{1}{\sqrt{2}} = \frac{\pi}{4}$$

4. Find the sum of n terms of the series

$$\cos A + \cos(A + B) + \cos(A + 2B) + \text{etc.}$$

5. Define the polar triangle of a given spherical triangle, and prove that the sides of the one are supplemental to the angles of the other.

6. If A, B, C, be in arithmetical progression, prove $\sin A - \sin C = 2 \sin(A - B) \cos B$.

B.

7. Prove $\log_e(1 + y) = y - \frac{1}{2}y^2 + \frac{1}{3}y^3 - \frac{1}{4}y^4$, etc ; and deduce from this the series

$$\log_e(n + 1) - \log_e(n - 1) = 2\left(\frac{1}{n} + \frac{1}{3n^3} + \frac{1}{5n^5} + \right)$$

8. (1) Prove that $\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7}$ etc.

(2) Prove that $\frac{\pi}{6} = \frac{1}{\sqrt{3}}\left\{1 + \frac{1}{3}\cdot\frac{1}{3} + \frac{1}{5}\cdot\frac{1}{3^2} - \frac{1}{7}\cdot\frac{1}{3^3} + \text{etc.}\right\}$

9. Show that if m be odd

$$2^m \cos^m \theta = 2 \cos m\theta + 2m \cos (m-2)\theta + 2 \frac{m(m-1)}{1.2} \cos (m-4)\theta + \text{etc.}$$

and apply the formula to the expansion of $2^4 \cos^5 \theta$.

10. In a spherical triangle prove :

(2) $\sin A = \frac{2}{\sin b \sin c} \sqrt{\sin s \sin (s-a) \sin (s-a) \sin (s-c)}$

(2) $\cos a = \cot A \sin B + \cos \beta \cos c$.

11. Express the area of a spherical triangle in turns of its angles.

12. Any two sides of a spherical triangle are together greater than the third side: and the three sides are together less than the circumference of a great circle.

B.A. AND THIRD YEAR HONOUR MATHEMATICS.

DYNAMICS.

WEDNESDAY, APRIL 5TH :—2 TO 5 P.M.

(Only eight questions to be attempted.)

A.

1. Define the Hodograph of an orbit, and prove its principal property. A particle is describing a circle uniformly. Show that its acceleration $\frac{v^2}{r}$ towards the centre.

2. A particle is projected at elevation a with velocity v from the foot of a plane inclined β (a) to the horizon. Find the range on the inclined plane. What is the condition that it should strike the plane at right angles ?

3. Shew that a particle under an attraction proportional to the distance from a fixed point will describe an ellipse about the point as centre.

If T be the period, and a the amplitude of a S. H. M., and if v be the velocity and s the distance from the centre at a given instant, shew that

$$a = \left(\frac{T^2 v^2}{4\pi^2} + s^2 \right)^{\frac{1}{2}}$$

4. Two particles of equal mass move one after the other in the same straight line, the velocity of the hindermost is double that of the other. Shew that their velocities after direct impact will be as $3 - e$; $3 + e$, e being the coefficient of elasticity.

5. Obtain the equation for a central orbit

$$\frac{d^2 u}{d\theta^2} + u = \frac{P}{h^2 u^2}$$

Find the equation to the orbit, if the force varies inversely as the square of the distance, and the particle is projected at an angle of 45° to the initial distance, with a velocity $\sqrt{2}$ times the velocity in a circle at the same distance.

6. A particle is projected from the lowest point of an ellipse, whose axis major is vertical along the inner side of the curve. Shew that the least velocity of projection in order that it may just not leave the curve at the top is $\sqrt{g\,a\,(5 - e^2)}$.

7. Prove that in any central orbit

$$P = \frac{h^2}{p^3}\,\frac{dp}{dr}$$

Find the law of force under which a particle will describe a circle about a point on its circumference.

8. A point moves in a plane in such a manner that its tangential and normal accelerations are always equal, and its velocity is $e^{\tan^{-1}\frac{s}{c}}$, s being the arc measured from a fixed point. Prove that $s = c\,\frac{dy}{dx}$ and hence that the path is a catenary.

B.

(IV Year only.)

(*a*) Explain d'Alembert's Principle, and employ it to find the general equations of motion of a rigid body.

(*b*) Find the moment of inertia of (1) an ellipse about the minor axis, (2) a rectangle about a diameter.

(*c*) A uniform bar, of length $2a$, is suspended from a fixed, parallel, and equal horizontal bar, by strings of equal length joining adjacent ends of the bars. An angular velocity w is given to the lower bar about a vertical axis through its centre. Shew that it will rise through a vertical height $= \frac{a^2 w^2}{6g}$.

(*d*) A uniform horizontal stick falling to the ground strikes at one end on a stone. Shew that the blow is one-half what it would have been had both ends struck upon stones at the same moment.

(*e*) Obtain Euler's equations of Motion for a body having one point fixed.

(*f*) When the principal moments at the centre of gravity are known, show how to determine the moment of inertia about (*a*) a line inclined to the principal axes, but passing through the C. G., (*b*) a parallel line not passing through the C. G.

B.A. AND THIRD YEAR HONOURS IN MATHEMATICS AND NATURAL PHILOSOPHY.

DIFFERENTIAL EQUATIONS.

MONDAY, APRIL 10TH :—MORNING, 9 TO 12.

1. Solve the equations

(*a*) $(x-y^2)\,dx + 2\,xy\,dy = 0$,

(*b*) $\sec^2 x \tan y\,dx + \sec^2 y \tan x\,dy = 0$.

(*c*) $\dfrac{dy}{dx} + y \cos x = \frac{1}{2} \sin 2x$.

2. Solve $x + y\dfrac{dy}{dx} = 2y$.

3. Explain the methods of solution of a differential equation of the first order: 1. When the independent variable is absent. 2. When the dependent variable is absent.

(*a*) Solve $y = a\dfrac{dy}{dx} + b\left(\dfrac{dy}{dx}\right)^2$

4. If X denote any function of x, prove that

$$f(D)\,e^{ax}\,X = e^{ax}\,f(D+a)\,X$$

where f denotes an algebraical function which can be expanded in ascending or descending integral powers (or both) of the variable.

(*a*) Apply the above to the equation

$$\left(\frac{d}{dx} - a\right)^n u = e^{ax}$$

5. Solve $\dfrac{d^4y}{dx^4} + 2n^2\dfrac{d^2y}{dx^2} + n^4 y = 0$.

6. Explain the method of solving the linear equation of the second order

$$\frac{d^2y}{dx^2} + P\frac{dy}{dx} + Qy = R$$

where P, Q and R are functions of x,

(*a*) Solve $\frac{d^2y}{dx^2} - x^2\frac{dy}{dx} + xy = x^{m+1}$

7. Prove that the orthogonal trajectory of the system of curves included in

$$y = cx^n$$

is a family of conics.

8. Find the equation of condition that

$$P\,dx + Q\,dy + R\,dz = 0$$

(where P, Q, R, are functions of x, y, z,) should be derivable from a primitive of the form $\phi(x, y, z,) = C$.

a. Integrate

$$(y\,dx + x\,dy)(a-z) + xy\,dz = 0.$$

9. Solve the simultaneous equations

$$\frac{d^2x}{dt^2} - a\frac{dy}{dt} + \mu^2 x = 0$$

$$\frac{d^2y}{dt^2} + a\frac{dx}{dt} + \mu^2 y = 0$$

10. Solve the equations

$$\frac{dx}{dt} + 5x + y = e^t; \quad \frac{dy}{dt} + 3y - x = e^{2t}.$$

11. State the rule for finding the integral of the partial differential equation

$$Pp + Qq = R$$

and apply it to the equation

$$xp + yq = nz.$$

12. Show that the equation

$$\frac{d^2y}{dx^2} + P\frac{dy}{dx} + Q = 0$$

(P and Q being functions of x) may be changed into the form

$$\frac{d}{dz}\left\{\frac{1}{U}\frac{dy}{dz}\right\} + y = 0$$

where U is a function of z and z is a new variable such that

$$dz = Qe^{\int P\,dx}\,dx.$$

B.A. AND THIRD YEAR HONOUR EXAMINATIONS.

MATHEMATICS AND NATURAL PHILOSOPHY.

CALCULUS.

WEDNESDAY, APRIL 19TH :—MORNING, 9 TO 12.

1. Prove that no curve of an odd degree can be a closed curve.

2. State and prove the generalization of the property of the asymptotes of an hyperbola, viz., that the farther from the origin the asymptote is produced the nearer it approaches the hyperbola, but never meets it.

3. Find the number and the nature of the singular points on the curve

$$x^4 + 4\,ax^3 - 2\,ay^3 + 4\,a^2\,x^2 - 3\,a^2\,y^2 + 4\,a^4 = 0.$$

4. Prove the expression for the radius of curvation of a curve in terms of r and p, viz., $r\,\frac{dr}{dp}$.

5. Eliminate a and b from the equation $x\,y = a\,e^{x} + b\,e^{-x}$.

6. If V be any function of x and y where $x = r\cos\theta$; $y = r\sin\theta$, prove

$$\frac{d\,V}{d\theta} = x\,\frac{d\,V}{dy} - y\,\frac{d\,V}{dx}\,;\; r\,\frac{d\,V}{dr} = x\,\frac{d\,V}{dx} + y\,\frac{d\,V}{dy}\,;$$

$$\frac{d\,V}{dx} = \cos\theta\,\frac{d\,V}{dr} - \frac{\sin\theta}{r}\,\frac{d\,V}{d\,\theta}\,;\quad \frac{d\,V}{dy} =$$

$$\sin\theta\,\frac{d\,V}{dr} + \frac{\cos\theta}{r}\,\frac{d\,V}{d\,\theta}.$$

7. Prove that the volume of the ellipsoid

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$$

is $\frac{4}{3}\,\pi\,a\,b\,c$.

8. Find the integrals

$$\int e^{x}\,(\cos x + \sin x)\,dx\,;\quad \int \frac{d\,\theta}{\sin 2\,\theta - \sin\theta}\,;$$

9. One angle of a triangle is given in position, find the envelope of the opposite side when the area is given.

10. Find the asymptotes to the curve

$$y^2 x - ay^2 = x^3 + ax^2 + b^3$$

11. (*a*) Trace the curve $r = a^{\theta}$

(*b*) Prove that at any point on the curve the angle between the tangent to the curve and the radius vector to the pole is constant.

(*c*) If the angle in (*b*) be called α, prove that the length of the arc between any two points of the curve to which the radii vectores are ρ and ρ_2 respectively is $(\rho_1 - \rho_2) \sec \alpha$

(*d*) Find the area swept out by the radius vector between the values 0 and 2π of θ.

(*e*) Prove that the evolute of the curve is the same as if the curve were turned round through an angle.

B.A. AND THIRD YEAR HONOURS IN MATHEMATICS AND NATURAL PHILOSOPHY.

ASTRONOMY.

FRIDAY, APRIL 21ST:—MORNING, 9 TO 12.

1. The apparent diameter of the Sun and its angular motion in longitude being accurately measured daily, it is found that the angular velocity varies as the square of the apparent diameter; show hence that the radius vector joining the Earth and Sun describes equal areas in equal times.

2. Trace the variation in the equation of time due to the elliptic motion only, neglecting the obliquity of the ecliptic.

3. In the elliptic motion of a planet, if θ be the mean anomaly, and u the eccentric anomaly, prove

$$\tan \frac{\theta}{2} = \sqrt{\frac{1+e}{1-e}} \tan \frac{u}{2}$$

4. Assuming that the amount of refraction is proportional to the tangent of the zenith distance, find the coefficient of refraction from the observed altitudes of a circumpolar star at its highest and lowest culminations at a given place.

5. Prove that the aberration of a star in latitude

$$= -20''.45 \sin \lambda (\sin (S-l)$$

where λ = latitude of star

S = longitude of sun

l = longitude of star.

6. On the supposition that a Planet's motion is uniform in a circle, show how the stationary points in its orbit can be determined.

7. Prove that the Moon's path is everywhere concave to the Sun.

8. If ϕ be the astronomical latitude of a place and ϕ' the geocentric latitude, prove that

$$\phi - \phi' = c \sin 2\phi \quad \text{nearly ; where } c \text{ is the compression.}$$

9. Investigate a method for finding the height of a mountain in the Moon.

10. Find the latitude of a place in the northern hemisphere from the observation that the true meridian altitude of a star whose declination was 16° 12′ 45″ N. was 54° 20′ 35″ S.

11. Find the apparent time at a place whose latitude is 24° 30′ N. if the true altitude of the Sun's centre in the forenoon is found to be 33° 20′ when its declination is 6° 47′ 50″ S.

12. Calculate the obliquity of the ecliptic and the Sun's longitude when the Right Ascension of the Sun is $11^h\ 6^m\ 30^s.79$ and its declination is 5° 43′ 52″.4 N.

B.A. HONOURS IN MATHEMATICS AND NATURAL PHILOSOPHY.

NEWTON'S PRINCIPIA—LUNAR THEORY.

TUESDAY, APRIL 11TH:—MORNING, 9 TO 12.

1. If a body revolve in any orbit under the action of a force directed to a fixed centre, find an expression for the force.

a. Apply this to show that if the orbit be an ellipse and the force be directed to the centre, it varies directly as the distance.

2. Two bodies attracting each other describe similar figures about their common centre of gravity and about each other.

3. Find in Newton's manner, the difference of the forces required to cause two bodies to re olve equally, on a fixed orbit, and the other in the same orbit revolving. Investigate the same question analytically also.

4. Find in Newton's manner the effect of the disturbing force on the eccentricity of the Lunar orbit in one revolution of the Moon.

5. Find the differential equation of the Moon's latitude.

6. Show that the disturbing force of the Sun is of the second order.

7. Prove geometrically that when the Moon is in opposition the effect of the disturbing force is to increase the distance of the Moon from the Earth.

8. Show that the eviction in longitude, viz.,

$$\frac{15}{4} \; m\, e \sin \{(2-2\, m-c)\, pt-2\, \beta + a\}$$

may be represented as the joint effect of certain periodic changes in the eccentricity of the Lunar orbit and in the mean longitude of its apse.

9. Prove that the term in u called the reduction, viz.,

$$-\frac{a\, k^2}{4} \cos 2\, (g\, \theta - \gamma)$$

is, when increased by a constant, nearly equal to the difference between the reciprocals of the values of the radius vector in the lunar orbit, and of its projection on the ecliptic.

B.A. HONOUR EXAMINATIONS IN MATHEMATICS AND NATURAL PHILOSOPHY.

SURFACES.

MONDAY, APRIL 17TH:—MORNING, 9 TO 12.

1. Prove that the differential equation of surfaces generated by a line moving parallel to the plane of $x\, y$ is

$$q^2\, r - 2\, pq\, s + p^2\, t = 0.$$

2. Find the differential equation of surfaces generated by the motion of a right line which always meets the intersection of the planes $\alpha = 0$, $\beta = 0$ while continuing parallel to the plane $\gamma = 0$.

3. Find the equation of the osculating plane at any point of a given curve.

a. Find the equation of the osculating plane for the curve

$$x = a \cos t,\ y = b \sin t,\ z = ct.$$

4. Define a geodesic line, and prove that if a line of curvature be a geodesic it must be plane.

5. The tangent planes to the surface of centres at the two points when any normal meets it cut each other at right angles.

6. Through any point on a surface it is generally possible to draw two lines which shall there meet the surface in three coincident points.

7. If a plane be drawn through the centre parallel to any tangent plane to a quadric, the axes of the section made by that plane are parallel to the normals to the two confocals through the point of contact.

8. Find the locus of the poles of the tangent planes of one quadric with respect to another.

9. A plane passes through a fixed line, and the lines on which it meets two fixed planes are joined by planes each to a fixed point; find the surface generated by the line of intersection of the latter two planes.

10. The sum of the squares of the projections of three conjugate diameters of a quadric on any plane is constant.

11. In the hyperboloid of one sheet any two generating lines belonging to opposite systems lie in the same plane.

12. Find the condition that the general equation of the second degree should represent a cone.

B.A. HONOUR MATHEMATICS.

ELECTRICITY.

MONDAY, APRIL 3RD :—AFTERNOON, 2 TO 5.

1. Deduce the law of the inverse square of the distance from the fact that the force inside a uniformly charged sphere is zero.

2. Determine the capacity of a condenser consisting of two parallel plates of large area compared with their distance apart.

3. State Kirchhoff's Laws for the currents in a net work of conductors.

4. An EMF, represented by $E_0 \sin ut$ is applied to a circuit of self-induction to and resistance R, with a condenser of capacity C in series. Determine the current at any time.

Find the relation between n, c and L so that the current may have the greatest possible amplitude.

5. Define magnetic *permeability*, *susceptibility* and *hysteresis*. Shew that $\mu = 1 + 4\pi K$.

6. Shew that the rate of working of a motor driven by a direct current will be a maximum, when the starting of the motor reduces the current by one half.

7. Find expressions for (*a*) the energy of a charged Leyden Jar, capacity c, and charge Q; (*b*) the magnetic force at any point in the axis of a circular current; (*c*) the potential of a magnet of length $2l$ strength of pole m, at a point distant r from the centre of the magnet along a line inclined at an angle θ to the magnetic axis. Shew that, if l is short compared with r, $V_0 = \frac{M \cos \theta}{r^2}$ where M is the moment of the magnet.

B.A. HONOUR MATHEMATICS.

STATICS.

MONDAY, 3RD APRIL:—MORNING, 9 TO 12.

1. State the Principle of Virtual Work, and prove it for forces acting at a point.

Shew that the force necessary to move a cylinder or radius r and weight ω up a plane inclined at angle α to the horizon by a crowbar of length l, inclined at β to the horizon, is

$$\frac{\omega r}{l} \frac{\sin \alpha}{1 + \cos (\alpha + \beta)}.$$

2. Find the equations to the Central Axis of a system of forces.

Twelve equal forces occupy the edges of a cube, the parallel forces acting in the same direction; prove that their central axis is a diagonal.

3. Prove Pappers' Theorem that if an area revolve about any axis in its own plane, the volume generated is equal to the product of the area into the length of the path described by the center of gravity of the area.

Find the volume of a solid sector of a sphere with a circular rim.

4. Shew that the resultant attraction of a rod AB upon an external point P bisects the angle APB.

5. Find the potential of a circular disc at any point P situated on its axis.

6. Obtain Laplace's equation for the Potential at any point external to the attracting matter,

$$\frac{d^2 V}{dx^2} + \frac{d^2 V}{dy^2} + \frac{d^2 V}{dz^2} = 0.$$

7. If the attraction be as the direct distance, shew that $V = C - \frac{1}{2} \Sigma m v^2$, and that Laplace's equation becomes $\Delta^2 V = -3M$, where M is the attracting mass.

SESSIONAL EXAMINATIONS.

THIRD YEAR, HONOUR MATHEMATICS.

STATICS.

FRIDAY, APRIL 21ST :—AFTERNOON, 2 TO 5 P.M.

1. State and prove Lami's Theorem.

If any transversal cut the directions of two forces, P, Q, acting at a point O, and their resultant R, in the points L, M, N, respectively, shew that

$$\frac{P}{OL} + \frac{Q}{OM} = \frac{R}{ON}.$$

2. State the principle of Virtual Work, and prove it for forces acting at a point.

Two uniform rods, AB, AC, freely jointed at A, rest with A capable of sliding on a fixed smooth horizontal wire in the plane ABC. B and C are connected by small smooth rings with two vertical wires in the same plane. If the rods are perpendicular, prove that

$$a\sqrt{(l + l^1)} = l\sqrt{l^1} + l^1\sqrt{l}, \text{ where } l, l^1$$

are the lengths of the rods, and a the distance between the vertical wires.

3. Define a couple, and shew how any system of forces in one plane may be reduced to a force and a couple. Deduce the conditions of equilibrium.

4. State the laws of Friction.

A ladder $A\,B$ rests against a smooth wall at B, and on a rough horizontal plane at A. A man whose weight is n times the weight of the ladder climbs up it. Prove that the frictions at A in the extreme cases where the man is at the two ends of the ladder are in the ratio of $+1$ to 1.

5. If G be the centre of gravity of any arc AP of the lemniscate $r^2 = a^2 \cos 2\theta$, prove that $0\ G$ bisects the angle $A\ O\ P$.

6. Shew that the distance of the centre of gravity of the area of a segment of a circle measured from the centre is

$$\frac{2}{3}\ \frac{r \sin^3 a}{a - \sin a \cos a}$$

where r is the radius, and a the semi-angle of the segment.

7. Find the equation to the curve in which a heavy string hangs between two points.

A heavy uniform string AB, of length l, is suspended from a fixed point A, while the other extremity B is pulled horizontally by a force equal to the weight of a length a of the string. Shew that the horizontal and vertical distances between A and B are

$$a \log \frac{l + \sqrt{l^2 + a^2}}{a}\ ,\ \text{and}\ \sqrt{l^2 + a^2} - a$$

respectively.

8. Find the Cartesian equations of equilibrium of a flexible inelastic string under any forces.

9. Prove that when a light string rests on a rough curve in a state bordering on motion, the ratio of the tensions at any points is $2^{\mu\theta}$, where θ is the angle between the tangents at those points.

A band without weight passes tightly round the circumference of two unequal rough wheels. One wheel is fixed, while the other is made to turn slowly round its centre. Shew that the band will slip first on the smaller wheel.

NATURAL SCIENCE.

SECOND YEAR.

SESSIONAL EXAMINATIONS.

BOTANY.

FIRST PAPER.

TUESDAY, APRIL 18TH:—MORNING, 9 TO 12.

1. Give a full account of the life history and structure of Pleurococcus vulgaris.

2. Give an account of the general structure and habits of growth of the Phœophyceæ, and show how the reproductive process is accomplished.

3. Discuss fully the significance of the prothallus in ferns, in the life history of the individual.

4. Discuss the characteristic features of the male gamete in Bryophytes, Pteridophytes and Spermatophytes, and show what changes it undergoes in the higher plants.

5. Give an account of the reproductive process in Zamia.

6. Indicate clearly the relative importance of close and cross fertilization, and show how these processes may be controlled or promoted in seed plants.

7. Explain fully the reason for an endosperm in Monocotyledonous seeds, and its absence from Dicotyledons.

8. State as clearly as you can some of the more important reasons in support of the recognised sequence :—

1. Gymnosperms,
2. Angiosperms.
   (*a*) Monocotyledons.
   (*b*) Dicotyledons.

as expressive of development.

SECOND YEAR.

BOTANY.

SECOND PAPER.

MONDAY, APRIL 17TH :—MORNING, 9 TO 12.

1. State as fully as you can the principal causes promoting movement of the nutrient fluids from the roots to the leaves.

2. Discuss the principal structural adaptations for the promotion and retardation of transpiration.

3. Give as full an account as you can of the way in which the wind influences the migration of plants.

4. Give a concise historical account of our conception of the cell as a unit of structure and function.

5. Give a concise account of the distinctive differences between the two leading types of vascular bundles, and show how each is related to the secondary growth of the stem to which it belongs.

6. State as clearly as you can what lessons are to be drawn from the effects of girdling a tree, with respect to the movement of nutrient fluids.

7. State what you can respecting the structure of the nucleus, and its importance in the life and activity of the cell.

8. What are the characteristic features of vegetation and climate in the Mediterranean Region? What other regions are comparable with it?

9. Explain the formation of a Flora, and indicate the general nature of the causes which tend to promote or restrict wider dispersion.

THIRD YEAR.

BOTANY.

MONDAY, APRIL 10TH :—MORNING, 9 TO 12.

1. Give a concise statement of the construction and theory of the Camera lucida.

2. State what principal defects are common to compound lenses and how they may be recognized.

3. Starch; give a full account of its

(*a*) physical properties,
(*b*) chemical composition,

(*c*) distinctive reactions.

(*d*) occurrence,

(*e*) distinction from inulin.

4. Give an account of the principal forms of plastids as to their

(*a*) distinctive features,

(*b*) occurrence,

(*c*) functional value.

5. A given section of tissue is supposed to contain starch, aleurone and oil. How may they be distinguished micro-chemically, and by what treatment may they be removed from the structure ?

6. A given section contains unmodified fundamental tissue, lignified tissue and cork. State how these may be distinguished structurally and micro-chemically, and show what chemical differences, if any, are represented in these three forms of tissue.

7. Give a concise account of the distinguishing features of an exogenous stem of the herbaceous type.

8. Show in what respects the stem of the gymnospermous type (Pinus) resembles the angiospermous type (Tilia), and in what essential respects they differ.

9. The presence of resin and tannin in a piece of wood is suspected. How will you prove their presence or absence, and distinguish them from one another.

10. Describe the structure of a vascular bundle of the collateral type. Show

(1) how this type differs in Monocotyledons and Dicotyledons,

(2) the form of the bundle sheath in each case,

(3) the importance of the hard bast as a mechanical tissue.

FOURTH YEAR.

BOTANY.

MONDAY, APRIL 10TH :— 9 TO 12 A. M.

1. Discuss the relationships of the Myxomycetes, and describe a typical member of the group.

2. Give an account of the reproductive processes of the Schizomycetes. Describe *Bacillus subtilis*.

3. Characterize the Conjugatae, and describe any member of the class.

4. Write a brief description of *Nemalion multifidum*, and compare its reproductive process with that of higher members of the Rhodophyceae.

5. Discuss the occurrence of sexuality in the Hyphomycetes.

6. Trace the life-history of *Puccinia graminis*.

7. Discuss symbiosis.

Describe *Umbilicaria pustulata*.

8. Give a short description of *Mnium*, and compare the genus with *Polytrichum*.

9. Write a concise account of the life history of *Pteris serrulata*.

10. Compare the Lycopodiaceae with the Selaginellaceae.

11. Discuss "alternation of generations" and the origin and development of the sporophyte.

HONOURS BIOLOGY.

BOTANY.

3 HOURS.

(*The candidate will select two questions only. Full treatment, including a consideration of views held by leading authorities, is required.*)

1. Give an exposition of the principal changes which accompany nuclear division, and apply these to an explanation of the theory of heredity.

2. Give a concise presentation of arguments in support of the theory of evolution as applied to plants.

Specific illustrations, drawn from your own work, are particularly desired.

3. Discuss the "Theory of Development" from the standpoint of our present knowledge, and show in what respects the theories of "Preformation" and "Epigenesis" are inadequate.

THIRD YEAR.

SESSIONAL EXAMINATION IN ZOOLOGY.

FRIDAY, APRIL 14TH :—MORNING, 9 TO 12.

Seven questions only are to be attempted, of which *two* must be selected from questions 7 to 10 inclusive.

1. Describe carefully the Protozoön Euglena, mentioning how the principal functions are carried out.

What is the bearing of this form on the fundamental questions of Biology ?

2. Describe carefully the life-history of Aurelia.

What is meant by the recapitulation theory of development ? Can you exemplify it in the case of the development you have described ?

3. Describe and compare the central nervous systems of Amphioxus and Lumbricus, and show how they are related to the primary ectoderm.

4. Describe the structure of the various types of eyes met with amongst the Mollusca.

Into how many categories can they be divided, and in what points does the type of each category agree with and differ from the Vertebrate eye ?

5. Give a sketch of the classification of Crustacea, giving brief diagnoses of the principal groups.

Which group is regarded as the most primitive, and upon what grounds does this conclusion rest ?

6. Give a brief description of the anatomy of a regular Sea-urchin, indicating where you can the relation of the structures to the habits.

How far can the modified structure of the two groups of irregular urchins be related to their abnormal habits ?

7. Give a brief description of the two principal types of limb met with amongst Vertebrates.

Can you mention any hypotheses as to the evolutionary origin of limbs and any facts which support them ?

8. Explain clearly what is meant by the terms "dermal bone" and "cartilage bone."

Can you mention any case in which both definitions are applicable to the same bones ?

9. Compare the structure of the heart and aortic arches in the Dog-fish, Frog, Bird and Rabbit.

What bearing have the resemblances between the Bird and the Rabbit in this respect on the question of the deduction of blood relationship from anatomical similarities.

10. Give an outline of the classification of Mammalia on the basis of the reproductive organs.

Show how the anatomical differences in the female are related to different methods of nutrition of the embryo.

THIRD YEAR.

SESSIONAL EXAMINATION IN ZOOLOGY.

PRACTICAL EXAMINATION.

FRIDAY, APRIL 14TH :—AFTERNOON, 2 TO 5.

1. Dissect the specimen A so as to thoroughly expose the nervous system. Mark with flag-labels (*a*) the supra-œsophageal ganglion ; (*b*) the place where the sternal artery passes through the nerve-cord ; (*c*) the last abdominal ganglion.

2. Mount and stain a portion of the pharynx of B. Sketch your preparation, naming the structures which can be seen in it.

[N. B.—Marks will be deducted if anything is put in the sketch which cannot be seen in the specimen.]

3. Examine the specimen C, and refer it as nearly as possible to its place in the animal kingdom, giving reasons for your answer. Make a permanent preparation of it.

4. Identify the specimen D. Sketch it, indicating the structures you can make out in it.

[A. Cambarus virilis. B. Amphioxus. C. Nais. D. Horizontal section of the gill of Unio.]

B.A. ORDINARY EXAMINATION IN ZOOLOGY.

FRIDAY, APRIL 14TH :—MORNING, 9 TO 12.

(*Only* 8 *questions to be answered,* 4 *to be selected from questions* 1 *to* 5 *inclusive, three from questions* 6 *to* 9 *inclusive and one from questions* 10 *and* 11.)

1. Give an account of the structure of a simple Ctenophore.

Enumerate the theories which have been put forward as to the relationships of this group, and the facts which support them.

2. Describe the various larval forms met with in the group Echinodermata, and state what is known of their metamorphosis into the adult form.

What light do these larvae throw on the questions of

(*a*) the origin of the group,

(*b*) the relation of the main divisions of the group to one another.

3. Give an account of the central nervous system amongst the Mollusca.

What light does this organ throw on the origin of the order Opisthobranchiata?

4. Give an account of the animals included under the term Polyzoa (Bryozoa.)

Do the animals in question form a natural group? Give reasons for your reply.

5. Describe the various types of jaws met with amongst insects.

How far does a classification based on the jaws agree with one deduced from the type of life history, and how is the divergence (if any) between the results of the two methods to be explained?

6. Describe the anatomy of one of the Cyclostomata.

Which structures are to be regarded as secondary, and which primitive as compared with the other Vertebrata? Give reasons in each case.

7. Describe the chief differences between the structure of a modern fish such as the Perch and that of an Elasmobranch.

What is the value of term "Ganoid" in modern Zoology?

8. Describe with diagrams the structure of the skull of the Rhynocephala.

How is this skull related (*a*) to that of the snakes.

(*b*) ——— Chelonia.

9. What are the distinguishing features of modern Insectivora?

Give a sketch of the relationship existing between the Insectivora and the other groups of Mammals as deduced from Palaeontology.

10. What is meant by a centrolecithal egg? Describe all the types of segmentation of centrolecithal eggs you know.

Give Balfour's expression for the law governing the different varieties of segmentation you have described.

11. Give an account of the "formation of the layers."

(*a*) in Amphioxus,

(*b*) in an Annelid,

(*c*) in the Chick.

What is the meant by "precocious segregation"? Can you justify the use of the term?

B. A. ORDINARY EXAMINATION IN ZOOLOGY.

PRACTICAL EXAMINATION.

FRIDAY, APRIL 14TH :—AFTERNOON, 2 TO 5.

1. Dissect the specimen A so as to display as much as possible of the circulatory, nervous, renal and reproductive systems.

Mark with flag labels (*a*) the left epididymis ; (*b*) the fifth right testis ; (c) the excretory vesicle of the sixth right nephridium ; (*d*) the sub-œsophageal ganglion.

2. Refer the specimen B to its position amongst the Arthropoda, giving reasons.

Make a preparation showing the mouth-parts.

3. Make a permanent preparation of C showing the structure, and identify it.

4. Refer the skull D to its position amongst the vertebrates, giving reasons.

[A. Hoindo medicinalis. B. Oniscus. C. Botryllus. D. The Skull of the Beaver.]

B. A. EXAMINATION FOR HONOURS.

TUESDAY, APRIL 18TH :—AFTERNOON, 2 TO 5.

1. Write an essay on Sexual Selection, giving the arguments of Darwin and Wallace for and against the theory.

2. What is meant by mimicry? How many varieties of it does Wallace recognize?

3. Give an account of the fauna of Madagascar and discuss its probable source.

4. Into how many zoological provinces does Wallace divide the land surface of the globe? Give their names and limits, and explain on what group of animals they are based, and why this group is selected for the purpose.

5. How is the difficulty that incipient species would be swamped by intercrossing met by Wallace?

B.A. ORDINARY EXAMINATION AND THIRD YEAR APPLIED SCIENCE.

GEOLOGY.

THURSDAY, APRIL 13TH :—MORNING, 9 TO 12 AND 2 P.M.

1. Draw up a scheme showing the classification of the Plutonic Rocks.

2. What do you understand by Metamorphism? In what situations are metamorphic rocks chiefly developed? Describe any occurrence in the vicinity of Montreal.

3. State what you know of the distribution and subdivisions of the Devonian System. Describe its development in various parts of Canada where it occurs. Mention some of its characteristic fossils.

4. State what you know concerning the Huronian System in North America.

5. When does the first well developed fauna appear in the earth's history? Describe a few of its chief forms.

6. State what you know concerning the coal deposits of the Dominion.

7. Outline the geography of North America in Cretaceous times. Compare the development of the Cretaceous in Canada with that in England, giving its distribution in each case.

8. State what you know of the history of the Appalachian district of North America in geological time.

9. What do you understand by the Tertiary? Explain the origin of the term. Mention any two great limestone formations belonging to it.

10. State the zoological or botanical and the geological relations of *Olenus*, *Spirifer*, *Pterichthys*, *Palaeospondylus*, *Ammonites*, *Petraia*, *Orthis*, *Dinotherium*, *Hesperornis* and the *Dinosaurs*.

2 O'CLOCK P.M.

11. Name the fossils exhibited, and state the geological formations to which they belong.

12. Name and describe the rock specimens.

B A. HONOUR EXAMINATIONS IN GEOLOGY AND NATURAL HISTORY.

(SECOND PAPER) PETROGRAPHY.

SATURDAY, APRIL 1ST, 1899:—MORNING, 9 TO 1.

1. What do you understand by Optic and Elasticity Axes? How are they related in Quartz, Hornblende and Apatite? Illustrate your answer by sketches.

2. What do you understand by Plutonic and Volcanic rocks? In what respects do they differ from each other and in what respects may they be identical?

3. What well-known rocks occur at the following localities: Plauen, Foya, Stenzelberg, Carrara, Arran, Drachenfels?

4. Describe the following structures and state the class of rocks in which they respectively occur: Poikilitic, Porphyritic, Epiclastic, Vesicular, Granophyric.

5. State what you know concerning four of the most celebrated occurrences of marble.

6. Describe briefly the following: Diorite, Basanite, Mylonite, Peridotite, Andesite, Obsidian.

7. State what you know concerning pneumatolic action and its products.

8. Write a somewhat detailed description of the rock Rhyolite, treating of its mineralogical composition, structure and mode of occurrence.

9. State what you know concerning the nature and origin of the "reaction rims" found about the olivine in certain gabbros.

10. What phenomena are seen as the result of strain in the rocks of districts which have been subjected to dynamic metamorphism?

11. Name the twelve hand specimens. What structures are exhibited by Nos. 10, 11 and 12?

12. Examine the five thin sections under the microscope. State in each case what minerals are present as well as the name and structure of the rock.

B.A. HONOUR EXAMINATION IN GEOLOGY AND NATURAL HISTORY.

(THIRD PAPER) ADVANCED GEOLOGY.

THURSDAY, APRIL 6TH:—MORNING, 9 TO 12.

1. Describe the tests to which a stone should be subjected in order to ascertain its fitness for building purposes.

2. What properties are of especial value in a rock to be used for road construction on the Macadam or Telford systems? Describe the tests applied, and enumerate two or three of the rocks which are found to be best suited for the purpose.

3. Classify mountain ranges according to their structure and origin. Explain briefly the origin in each case. Give one example of each class taken from North America.

4. Show how a knowledge of the geology of the South of England has recently led to the discovery of a new coal field. Illustrate your answer by geological sections, and show how this new coal field is related to those on the Continent.

5. Mention the chief geographical provinces of the United States, and explain briefly the geological causes which have determined their existence.

6. Describe briefly the physical features of Greece, and show how they have influenced the inhabitants of the country.

7. Write a short description of Artesian Wells, pointing out the geological conditions requisite for obtaining them in any district.

8. Describe the chief types of soils found in North America, and explain their origin.

B.A. HONOUR EXAMINATIONS IN GEOLOGY AND NATURAL HISTORY.

(FOURTH PAPER) PALÆONTOLOGY.

WEDNESDAY, APRIL 12TH:—MORNING, 9 TO 12.30.

1. Give a classification of the Foraminifera. Describe *Saccamina*, *Astrorhiza*, *Orbulina*, and *Textularia*.

2. Describe the structure of a typical Hexactinellid Sponge. Mention any two of these sponges which are found in the Palaeozoic, giving their characters and their age.

3. State what you know of the fossil remains of Medusae.

4. Describe a typical Tabulata Coral. Give the characters of *Michelinia*, *Petraia* and *Zaphrentis*.

5. Describe *Lingula*, *Crania*, *Orthis* and *Productus*. Give in each case their range.

6. Describe *Spirifer* and *Atrypa*.

7. State what you know of the Blastoidea.

8. Describe the parts of a typical Trilobite, and state what you know of Beecher's work in elucidation of the structure of *Triarthrus*.

9. State what you know of *Scolithus*.

10. Refer the specimens exhibited to their geological formations and to their places in the zoological or botanical classification.

B.A HONOUR EXAMINATIONS IN GEOLOGY AND NATURAL HISTORY.

(FIFTH PAPER) PRACTICAL GEOLOGY.

MONDAY, APRIL 17TH:—MORNING, 9 TO 12.30.

1. Draw out a general scheme showing the classification of ore deposits.

2. Explain the origin and mode of occurrence of Bog Iron Ore.

3. Describe the Comstock lode.

4. Describe the Bendigo gold deposits.

5. State what you know of the origin and mode of occurrence of Stream Tin.

6. Describe any ore body which has originated through magmatic differentiation.

7. Explain the terms:—*Anticlinal*, *Outcrop*, *Monoclinal*, *Thrust Plane*, *Overlap*.

8. How may cleavage be distinguished from bedding in a rock

9. Explain the mode of constructing a detailed horizontal section along any line of country from one point to another.

10. A model of a portion of the earth's crust is submitted. Describe in detail the stratigraphical relations of the several formations represented, and enumerate the successive geological changes which the district has experienced as indicated by the features of the district.

11. A line A B is draw across a portion of the geological map (No. I) submitted. Construct a horizontal section along this line.

12. Explain the structure of the district represented in map (No. II).

B.A. HONOUR EXAMINATIONS IN GEOLOGY AND NATURAL HISTORY.

(SIXTH PAPER) CANADIAN GEOLOGY.

WEDNESDAY, APRIL 19TH:—MORNING, 9 TO 12.

1. Draw a line of section across the Gaspé peninsula from the Gulf of St. Lawrence to mouth of the Cascapedia on the Bay Chaleur, continue it in a south-easterly direction to Minudie on the Bay of Fundy, and then on to the south-west end of the Joggins Section.

2. Make notes descriptive of Fundamental Gneiss, Tar Sands, Lake Agassiz, Foot-hills, Anorthosites.

3. Grenville series—stratigraphical position, petrographical character, and economic minerals.

4. In what formations in Canada are the following minerals found: salt, anthracite and petroleum? Describe their mode of occurrence.

5. State what you know concerning the distribution, geological position, petrographical character, and economic importance of the Laramie formation.

6. What formations are characterized by a predominance of the following fossils:

(*a*) Ophileta, Murchisonia, Maclurea, Pleurotomaria, Orthoceras.

(*b*) Productus cora, Athyris subtilata, Terebratula sufflata.

(*c*) Michellina, Zaphrentis, Fistulipera, Chonetes, Pentamerus.

7. Refer the following formations to their proper geological position, briefly stating any special points of interest about them: Vancouver, Niagara, Potsdam.

8. Describe the principal glaciers of the Canadian Pleistocene, stating their respective areas, direction of movement and effect on topographic form.

9. Discuss the coal-bearing formations of Canada under the following heads :

(*a*) Geographical and geological position.

(*b*) The horizon and the character of the coal.

10. Describe the Huronian in the Rainy Lake Region, giving the petrographical character of the series and their relation to the Laurentian.

11. Tabulate the formations developed in the Rocky Mountains. Correlate them with the Palæozoic of Eastern Canada. Give a brief general description of the rocks, and of the main structural characteristics of the Range.

B. A. HONOUR EXAMINATIONS IN GEOLOGY AND NATURAL HISTORY.

(SEVENTH PAPER) ADVANCED GEOLOGY (*Part Two*).

SATURDAY, APRIL 22ND :—MORNING, 9 TO 12.30.

1. Outline the geology of the London Basin. Draw a geological section across the basin, and explain the stages of the development of south-eastern England as shown by its geological structure.

2. Describe and classify the various forms of coral reefs, illustrating your descriptions by sketches and sections. Explain Darwin's views as to the origin of the several forms, and give some of the chief facts in support of them.

3. Give a sketch of the career of Desmarest and of the services which he rendered to geological science.

4. State what you know of the work of Cuvier and Brongniart on the Seine Basin.

5. Give a sketch of the rise of modern petrography.

6. What do you understand by a *Cycle of Deposition?* Give an example.

7. Explain the views of L. von Buch concerning "Craters of Elevation," and show the relation of the latter to Laccolites. Explain the views of Suess as to the nature and origin of *Batholites*. Give a Canadian example of the latter.

8. Describe the several great divisions into which—considered from a structural point of view—the continents of Europe, Asia and Africa taken together naturally fall. Explain the relation of the mountain chains to them.

9. State what you know concerning the movement of glaciers. Outline the principal theories which have been advanced to account for the phenomena.

10. State what you know of the Kammerbühl.

FACULTY OF APPLIED SCIENCE.

SESSIONAL EXAMINATIONS,

1899.

FACULTY OF APPLIED SCIENCE
SESSIONAL EXAMINATIONS
1895

FACULTY OF APPLIED SCIENCE.

FIRST YEAR.

ENGLISH.

1.—Write a short essay on any *one* of the following subjects :—

(*a*) Electricity as a Motive Power.

(*b*) Mining Development in British Columbia.

(*c*) The Disarmament of Europe.

2. Mention the essential features of a good paragraph, and mark any paragraph in your essay which might indicate these features.

3. Give any four rules for attaining *clearness* in a sentence.

4. Mention some of the means you would employ to obtain *force* in a sentence.

5. What are synonyms ? Illustrate their use as regards "*precision*" in writing.

6. Illustrate any two general methods of preserving unity in a sentence.

7. Correct the following sentences :—

(*a*) The leaders of the rebellion were condemned to either exile or death.

(*b*) He brings before us the domestic life of the freedmen and slaves as well as the king and his officers.

(*c*) A mystical arm, holding a sword, arose from the lake, and he rowed across and took it.

(*d*) Virtue only gains the reward at last.

(*e*) He told his neighbor that he had learned that his cattle were in his lot.

8. Write at least a page, showing your method of treatment of any given subject.

B.A. ORDINARY EXAMINATION AND THIRD YEAR APPLIED SCIENCE.

GEOLOGY.

THURSDAY, APRIL 13TH :—MORNING, 9 TO 12 AND 2 P.M.

1. Draw up a scheme showing the classification of the Plutonic Rocks.

2. What do you understand by Metamorphism? In what situations are metamorphic rocks chiefly developed? Describe any occurrence in the vicinity of Montreal.

3. State what you know of the distribution and subdivisions of the Devonian System. Describe its development in various parts of Canada where it occurs. Mention some of its characteristic fossils.

4. State what you know concerning the Huronian System in North America.

5. When does the first well-developed fauna appear in the earth's history? Describe a few of its chief forms.

6. State what you know concerning the coal deposits of the Dominion.

7. Outline the geography of North America in Cretacious times. Compare the development of the Cretaceous in Canada with that of England, giving its distribution in each case.

8. State what you know of the history of the Appalacian district of North America in geological time.

9. What do you understand by the Tertiary? Explain the origin of the term. Mention any two great limestone formations belonging to it.

10. State the zoological or botanical and the geological relations of *Olenus*, *Spirifer*, *Pterichthys*, *Palaeospondylus*, *Ammonites*, *Petraia*, *Orthis*, *Dinotherium*, *Hesperornis* and the *Dinosaurs*.

2 O'CLOCK P.M.

11. Name the fossils exhibited, and state the geological formations to which they belong.

12. Name and describe the rock specimens.

THIRD YEAR HONOURS IN NATURAL SCIENCE AND THIRD YEAR IN APPLIED SCIENCE.

(*Mining and Chemistry Courses.*)

MINERALOGY.

WEDNESDAY, APRIL 19TH :—MORNING, 9 TO 12.

Examiners, ... { B. J. HARRINGTON, M.A. PH.D.
F. D. ADAMS, M.A.SC., PH.D.

1. State and explain the Law of Symmetry relating to crystals. What do you understand by Centro-symmetry ?

2. Enumerate the holohedral and hemihedral forms of the Tetragonal system, and give symbols for each.

3. What are Tetarto-pyramids? Why are the pyramid faces in the Triclinic System of this nature? Explain the notation of pyramid faces in this system.

4. Discuss the value of cleavage, fracture and colour as specific characters.

What is the difference between faces of parting and cleavage in minerals ?

5. Explain the employment of dense liquids in the determination of specific gravities and in the separation of minerals of different densities. What are the principal liquids used for these purposes ?

6. To what causes are striæ on the faces of crystals due ?

7. Name and characterize the three Hydrous Oxides of Iron.

8. Describe briefly each of the following species:—Argentite, Millerite, Bornite, Arsenopyrite, Cerargyrite.

9. Give the composition, crystalline form and hardness of Rutile, Spinel, Manganite, Stibnite and Marcasite. Is there any chemical reason why Marcasite should undergo decomposition more readily than Pyrite ?

10. Describe two of the crystal models shown, and give symbols for the faces. Name also and describe any three of the mineral specimens.

THIRD YEAR HONOURS IN NATURAL SCIENCE AND THIRD YEAR IN APPLIED SCIENCE.

DETERMINATIVE MINERALOGY.

FRIDAY, 21ST APRIL:—MORNING, 9 TO 11.

1. Describe how oxidising and reducing flames are produced with the blowpipe, and point out carefully upon what facts the difference in their chemical effect depends.

2. Mention the uses in determinative mineralogy of the following reagents: Nitric acid, turmeric, fluor spar, potassium iodide, magnesium, potassium bisulphate.

3. Give the principal reactions of the following elements: Antimony, boron, lead, molybdenum, phosphorus, sulphur, titanium.

4. What are the principal reactions obtained on heating substances in the closed tube and upon charcoal?

5. How is the fusibility of a mineral determined? What is meant by such an expression as "Prehnite fusibility 2?"

6. Define the following terms:—Decrepitation, specific gravity, pyro-electric, roasting streak, malleable.

7. Give the principal characteristics of the following minerals: Anhydrite, bornite, corundum, franklinite, rutile, zircon.

Determination of minerals in the mineralogical laboratory at 2 p.m.

FIRST YEAR.

CHEMISTRY.

FRIDAY, APRIL 14TH:—MORNING, 9 TO 12.

Examiners, ... { J. WALLACE WALKER, M.A., PH.D.
ALEXANDER BRODIE, M.A.SC.

1. By what means are sodium and chlorine respectively prepared from common salt? What are the properties of these two substances?

2. Chlorine is said to be a diatomic gas, and its molecule is represented by the symbol Cl_2; what are the experimental facts upon which this conclusion is based?

3. State what takes place when sulphuric acid acts upon the following metals: (*a*) zinc, (*b*) iron, and (*c*) copper.

4. Describe the manufacture of sulphuric acid.

5. In what forms does carbon occur in nature? What are the two compounds which it forms with oxygen, and how is their molecular composition experimentally determined?

6. Explain the terms 'acid,' 'base,' 'salt' and 'di-basic acid,' giving examples.

7. Point out the great physical differences but strong chemical resemblances between carbon and tin.

8, How is arsenious oxide obtained from arsenical pyrites? How would you test for the presence of arsenic in a solution?

9. Describe the preparation of any three of the following substances from naturally occurring materials: (*a*) phosphorus pentoxide, (*b*) nitric acid, (*c*) magnesium, (*d*) copper sulphate, (*e*) potassium permanganate.

10. Describe the preparation of pig iron from an iron ore. What is the difference between cast iron, wrought iron and steel?

SECOND YEAR.

CHEMISTRY OF THE METALS.

THURSDAY, 20TH APRIL:—MORNING, 9 TO 12.

1. Upon what grounds are the elements divided into metals and non-metals? What are the principal characteristics of the metals?

2. Name the metals of the alkalis; describe carefully the commercial preparation of one of them, and of an important compound of one of them.

3. Compare and contrast beryllium and magnesium with respect to their chemical properties.

4. Give an outline of the metallurgy of copper or of silver.

5. Mention the principal ores of zinc, and give the properties of the metal.

6. Tell what you know with regard to pearl-ash, gun-powder, bleaching-powder, "hypo," kaolin, gun-metal.

7. How is metallic aluminium obtained?

8. What are the principal inorganic chemical compounds employed in photography, and what reactions do they undergo during the photographic processes?

9. How does gold occur in nature? Describe the most important methods employed in obtaining it.

10. Tell what you know with regard to tin and its compounds.

THIRD AND FOURTH YEAR ARTS AND APPLIED SCIENCE.

ORGANIC CHEMISTRY.—(*First Paper.*)

SATURDAY, JANUARY 28TH.

Examiner,.....J. WALLACE WALKER, M.A., PH.D.

1. Give a short outline of the structural theory of organic chemistry, with special reference to the isomerism of the alcohols.

2. What are the chief natural sources of the paraffins, and what are the chemical characteristics of that class of bodies which distinguish them from the olefines and from benzene?

3. What are the main products obtained in the destructive distillation of wood, and how may they be separated from each other? What are the essential properties of the classes of compounds to which they belong?

4. Describe the process of fermentation by yeast, and the various substances produced from sugar by this means.

5. Classify the alcohols, and show how some of them can be made synthetically.

6. Give an outline of the most important synthetical reactions for which malonic ether is employed.

7. Describe the preparation and properties of methylamine. Compare the various kinds of amines with ammonia.

8. Indicate the relationship between the sugars dextrose, lævulose and maunose, and explain the reactions by means of which this has been determined.

THIRD AND FOURTH YEAR ARTS AND APPLIED SCIENCE.

ORGANIC CHEMISTRY.—(*Second Paper.*)

TUESDAY, APRIL 11TH:—MORNING, 9 TO 12.

Examiner,.....J. WALLACE WALKER, M.A., PH.D.

1. What are the chief products obtained from coal tar, and how are they isolated?

2. State in brief outline the reasons for Kekule's benzene theory.

3. Compare the action of nitrous acid on a primary amine of the aromatic series with the corresponding reaction in the fatty series.

4. What is the "Sandmeyer reaction"? Give examples of its value in the preparation of pure benzene derivatives.

5. What is phthalic acid, and how is it prepared commercially?

6. Contrast the action of sulphuric acid on paraffins and on hydrocarbons of the aromatic series. How are the sulphonic acids isolated, and what substances are prepared from them?

7. Which of the common dye stuffs are triphenyl methane derivatives, and how are they prepared?

8. How is alizarine prepared from anthraquinone, and what relation does it bear to anthracene?

B.Sc. (*Chemistry Course.*)

INORGANIC CHEMISTRY.

MONDAY, APRIL 17TH:—MORNING, 9 TO 12.

Examiner, ...B. J. HARRINGTON, M.A., PH.D.

1. Explain the statement that a triacid base can form three salts with a monobasic acid.

2. What evidence can you adduce as to the existence of elements in the nascent state?

3. What different views have been held with regard to the constitution of the Oxygen Acids of Chlorine?

4. What are Sulpho salts, and what their relation to Sulphides? How are they acted upon by ordinary acids?

5. How would you prepare Cyanogen gas? What are the principal changes that take place in an aqueous solution of the gas?

6. What are Polysilicic Acids? Explain their constitution.

7. State concisely how you would prepare any three of the following compounds: Chloric Acid, Phosphorus Trichloride, Sodium Thiosulphate, Nickel Carbonyl, Calcium Carbide.

8. Name the Platinum Metals, and state what you know with regard to their occurrence in nature. How are they extracted from their ores?

9. What are Alums? Explain their constitution. How is Chrome Alum prepared?

10. Explain what is meant by heat of neutralization and avidity of acids.

SECOND YEAR.

ANALYTICAL CHEMISTRY.

TUESDAY, APRIL 4TH:—MORNING, 9 TO 12.

1. What important reactions may be obtained (*a*) by heating substances in the closed tube, (*b*) by heating substances on charcoal, or (*c*) by dissolving substances in a bead of borax or of microcosmic salt?

2. A non-metallic substance is submitted for analysis, the object being to determine what metals it contains; describe carefully the method of bringing it into solution.

3. In precipitating metals of the silver group with hydrochloric acid, a very large excess of the reagent is often carelessly added; to what mistakes in connection with the silver group may this give rise, and how may it prevent the obtaining of correct results in the copper group?

4. Describe carefully the separation of the sulphides of arsenic, antimony and tin from those of the metals of the copper group when all have been precipitated together, giving reasons for each step.

5. Give two confirmatory tests for bismuth, and one each for cobalt, barium and strontium.

6. How may a small quantity of potassium chloride be recognised in presence of much sodium and ammonium chlorides?

7. Into what groups are the ordinary inorganic acids divided for purposes of analysis; upon what reactions is the division based; and what are the members of each group?

8. Careless workers often report the presence of sulphuric and hydrochloric acids in substances in which they do not exist. Can you account for these mistakes.

9. What are the most important reactions of the following acids: Phosphoric, hydrofluoric, silicic, hydrobromic, hydrocyanic, nitric?

10. Describe the course of analysis of an alloy containing lead, tin, bismuth and zinc.

THIRD YEAR.

ANALYTICAL CHEMISTRY.

TUESDAY, APRIL 4TH:—MORNING, 9 TO 12.

1. Describe a method for testing an analytical balance and set of weights.

2. Describe in detail a method of preparing pure sodium chloride or pure calcium carbonate.

3. State very briefly how (*a*) SO_4 is determined in copper sulphate, (*b*) chlorine in sodium chloride, (*c*) nickel in nickel ammonium sulphate, (*d*) SiO_2 in a silicate insoluble in acids.

4. How may the percentage of carbon dioxide in a sample of sodium carbonate be determined?

5. How are burettes and pipettes calibrated?

6. State clearly what is meant by a normal solution; and tell how much silver nitrate and sulphuric acid normal solutions of these substances contain.

7. 50 c.c. of a solution of ammonia is placed in a beaker, a drop or two of solution of methyl orange added, and normal sulphuric acid run in from a burette until the indicator just begins to turn pink; 18.5 c.c. of the acid is found to have been used. How much NH_3 was there in a litre of the solution of ammonia used?

8. Give an outline of a method for analysing limestone.

9. Given a standard solution of potassium dichromate, how may the percentage of iron in a sample of siderite be determined? Give equations for the chemical changes involved.

10. 1.0354 gr. of pure crystallised copper sulphate is dissolved in water and precipitated by sodium hydrate; the precipitate, after ignition, deduction of filter-ash, etc., is found to weigh 0.3072 gr., and from this the percentage of copper present in the sulphate is calculated. What is the error of the determination?

B.Sc. EXAMINATIONS (*Mining Course*).

ASSAYING.

TUESDAY, APRIL 4TH:—MORNING, 9 TO 12.

Examiners, ... { A. P. SAUNDERS, B.A., Ph.D. / J. W. BELL, B.A.Sc.

1. Explain the re-actions involved in the use of Potassium Dichromate and Permanganate solutions as oxidizers.

2. Describe the determination of Water, Volatile Combustible Matter, Fixed Carbon and Ash in Coal.

3. Work out a method for the analysis of a mineral containing Zinc, Copper, Lead and Sulphur.

4. Describe the estimation of Calcium by the volumetric method, using Potassium Permanganate solution.
If one gram of a Limestone yields an amount of Calcium Oxalate requiring 10 c.c. of a normal Permanganate solution for oxidation, what is the percentage of Calcium in the rock?

5. Describe the determination of Zinc by the Ferrocyanide method.

6. State how you would ascertain the value of the ores, etc., represented by the specimens before you.

7. Describe briefly the Scorification and Crucible Assays. State the conditions under which either is to be preferred.

8. Give method of assay and charge to be used for each of the following ores, etc.:
Oxidized ore, Silicious ore, Face Gold ore in Silicious rock, Galena in Quartz, Galena in Limestone, Grey Copper, Copper Matte.

9. Give a concise explanation of principles involved in the use of Silica, Litharge, Bicarbonate of Soda, Carbonate of Potash and Borax as fluxes in the Crucible Assay.

10. Describe and explain the process of parting.

FIRST YEAR.

MATHEMATICS, I.

TUESDAY, DECEMBER 20TH :—MORNING, 9 TO 12.30.

Examiner.....R. S. LEA, MA.E.

1. The sum of the squares on the four sides of any quadrilateral exceeds the squares on the two diagonals by four times the square on the straight line which joins the middle points of the diagonals.

2. Given the base and the difference of the squares on the sides of a triangle, find the locus of the vertex.

3. Inscribe a circle in a given regular pentagon.

4. From the angular points of a triangle ABC, straight lines AD, BE, CF, are drawn perpendicular to the opposite sides, and terminated by the circumscribing circle. If O be the point where they intersect, prove that OD, OE, and OF are bisected by the sides of the triangle.

5. The middle point of the hypotenuse of a right angled triangle is equidistant from the three vertices.

6. If two triangles have one angle of the one equal to one angle of the other, and the sides about these angles proportional, they shall be similar.

7. Prove by the method of transversals that a line drawn parallel to the base of a triangle cuts the sides proportionally.

8. If a straight line is parallel to a line in a given plane, it is either parallel to that plane or lies in it.

9. The sum of the faces of any convex polyhedral angle is less than four right angles.

10. Find the volume of the frustum of a triangular pyramid.

11. Show how to divide the volume of a right circular cone in any required ratio by a plane parallel to the base.

12. In a parabola the tangent at any point P

(1) Cuts the axis at a point whose distance from the vertex is equal to the abscissa of P.

(2) Cuts the directrix and latus rectum produced in points equidistant from the focus.

13. Prove that the ratio of the distances of every point on an ellipse from a fixed point and a fixed straight line in its plane is constant.

14. Show that the locus of the centres of circles which touch two unequal intersecting circles consists of an ellipse and a confocal hyperbola.

FIRST YEAR.

MATHEMATICS, II.

TUESDAY, APRIL 4TH:—MORNING, 9 TO 1.

Examiner,.....R. S. LEA, MA.E.

1. Factor (1) $x^4 - 19\ x^2\ y^2 + 25\ y^4$ (2 factors).

(2) $y^2\ z^2\ (x^4 - 1) + x^2\ (y^4 - z^4)$ (3 factors).

(3) $x^3 - 5x^2 - 2x + 24$ (3 factors).

2. Show that:

(1) $$\frac{\frac{1}{a} + \frac{1}{b+c}}{\frac{1}{a} - \frac{1}{b+c}} \left\{1 + \frac{b^2 + c^2 - a^2}{2bc}\right\} = \frac{(a+b+c)^2}{2\,bc}$$

(2) $ab\,(a+b) + bc\,(b+c) + ca\,(c+a) + 2\,abc = (a+b)\,(b+c)\,(c+a)$.

(3) $(a+b+c)^3 = a^3 + b^3 + c^3 + 3\,(a+b)\,(b+c)\,(c+a)$.

3. Solve

(1) $$\frac{x+5}{x+4} - \frac{x-6}{x-7} = \frac{x-4}{x-5} - \frac{x-15}{x-16}$$

(2) $$\frac{a^2\,(x-b)}{a-b} + \frac{b^2\,(x-a)}{b-a} = x^2$$

(3) $$\frac{6\sqrt{x} - 7}{\sqrt{x} - 1} - 5 = \frac{7\sqrt{x} - 23}{7\sqrt{x} - 21}$$

4. If α and β are the roots of the equation

$$\frac{x}{p} + \frac{p}{x} = \frac{p}{q} + \frac{q}{p}$$ show that $$\frac{\alpha^2 + \beta^2}{\alpha\beta} = \frac{p^4 + q^4}{p^2\,q^2}$$

5. If $\frac{a-b}{ay+bx} = \frac{b-c}{bz+cx} = \frac{c-a}{cy+az} = \frac{a+b+c}{ax+by+cz}$

then each of these ratios equals

$$\frac{1}{x+y+z} \quad \text{unless } a+b+c=0.$$

6. Show that the sum of an infinite number of terms of a decreasing Geometrical Progression is $\frac{a}{1-r}$ where a is the first term and r is the common ratio.

By means of ths result prove the rule for finding the value of a repeating decimal.

7. Three numbers whose sum is 15 are in arithmetical progression. If 1, 4 and 19 be added to these respectively, they will be in geometrical progression. Find them.

8. How many terms of the natural numbers beginning with 4 give a sum of 5350?

9. Determine a formula for finding the number of combinations which can be made from n different things, taking them r at a time.

Find the value of r which will make this number the greatest possible.

10. How many permutations can be made with the letters of the word

(1) Transvaal (*a*) in a row.
(*b*) in a ring.

(2) Volume (*a*) keeping the vowels in the even places.
(*b*) without any restriction.

11. State the Binomial Theorem.

Find by means of it $\sqrt[5]{128}$ to four decimal places.

12. Find the coefficient of x in the expansion of

$$\left(x^2 - \frac{a}{2x}\right)^{14}$$

13. Show that the middle term of

$$(1+x)^{2n} \text{ is } \frac{1.3.5.....(2n-1)}{\lfloor n} 2^n x^n.$$

FIRST YEAR.

MATHEMATICS, III.

TUESDAY, APRIL 11TH :—MORNING, 9 TO 1.

Examiner, ... R. S. LEA, MA.E.

1. One angle of a triangle is 2 radians and another is 10°. Find the third to the nearest second.

2. Prove that :

(1) $(\sin\theta + \cos\theta)(\tan\theta + \cot\theta) = \sec\theta + \operatorname{cosec}\theta$

(2) $(\sec\theta - \cos\theta)(\operatorname{cosec}\theta - \sin\theta) = \dfrac{\tan\theta}{1+\tan^2\theta}$

(3) $\sin^2\theta\tan\theta + \cos^2\theta\cot\theta + 2\sin\theta\cos\theta = \sec\theta\operatorname{cosec}\theta$

(4) $\cos\dfrac{\theta}{2} + \sin\dfrac{\theta}{2} = \pm\sqrt{1+\sin\theta}$

(5) $\dfrac{\sin 5\theta - \sin 3\theta}{\cos 3\theta - \cos 5\theta} = \cot 4\theta.$

3. Solve : (1) $\sec\theta\operatorname{cosec}\theta + 2\cot\theta = 4$,

(2) $\sin 7\theta - \sin 5\theta = \sin 3\theta - \sin\theta.$

4. In a plane triangle

(1) $\sin\dfrac{A}{2} = \sqrt{\dfrac{(s-b)(s-c)}{bc}}$

(2) $\sin\frac{1}{2}(A-B) = \dfrac{a-b}{c}\cos\dfrac{C}{2}$

(3) $\sin A\cos B\cos C + \sin B\cos C\cos A + \sin C\cos A\cos B = \sin A\sin B\sin C.$

5. Deduce a formula for finding the area of (*a*) a plane triangle, (*b*) a spherical triangle.

6. Deduce a formula for finding the dihedral angles between the faces of a regular polyhedron.

Apply it to find those of the Octahedron.

7. State and prove the relations that exist between the sides and angles of a spherical triangle and those of its polar.

8. In any spherical triangle :

(1) $\cos A = \dfrac{\cos a - \cos b\cos c}{\sin b\sin c}$

(2) $\tan \frac{1}{2}(A - B) = \dfrac{\sin \frac{1}{2}(a - b)}{\sin \frac{1}{2}(a + b)} \cot \dfrac{C}{2}$

(3) A side and the opposite angle are of the same species when there is another side which is as near 90° as the given one is.

9. The sides of a plane triangle are $a = 1.261$, $b = .983$, $c = .6463$. Calculate the angles, the radius of the inscribed circle, that of the circumscribed circle, and those of the three escribed circles. Apply the ordinary checks to determine the accuracy of the angles and the radii.

10. In the spherical triangle in which $a = 99° 40' 48''$, $b = 64° 23' 15''$, $A = 95° 38' 4''$

Show that

$B = 65° 33' 10''$, $C = 97° 26' 29''$, $c = 100° 49' 30''$.

FIRST YEAR.

MATHEMATICS, IV.

MONDAY, APRIL 17TH:—MORNING, 9 TO 12.

Examiner,.....G. H. CHANDLER, M.A.

1. A train having a speed of 45 miles per hour is brought to rest in 726 feet after the brakes are applied. Calculate the acceleration.
Also find the time of coming to rest.

2. Define poundal and dyne, and find the ratio of the former to the latter.

3. When an elevator is descending, the pressure of the elevator floor on a man whose weight is 160 lbs. is only 140 lbs. What is the speed of the elevator when it has descended 8 feet ?

4. A velocity represented by one side of a square is changed into that represented by the last side in order from the given one, but taken in the opposite direction round the square. Find the change of velocity in magnitude and direction.

5. A shell moving at the rate of 20 feet per second bursts into two fragments of mass 45 and 25 lbs., respectively. The former continues on with a speed of 40 feet per second. What is the motion of the other ?

6. Prove that the moments of two forces about any point in their resultant are equal and opposite.

7. A body weighing 20 lbs. rests on an inclined plane and is supported by a horizontal force of 15 lbs. Find

(1) the pressure on the plane;

(2) what force parallel to the plane would support it;

(3) the pressure on the plane in the second case.

8. Mercury stands 5 in. deep in a U tube of uniform section and 30 inches high. One side of the tube is now filled up with water. What is the depth of the water?

9. A piece of wood weighs 6 lbs. A piece of lead (sp. gr. $11\frac{1}{3}$) weighing 17 lbs. is attached to it, and the whole mass weighs 14 lbs. in water. Find the specific gravity of the wood.

10. What is meant by the hodograph of a point's motion? By means of the hodograph find the acceleration of a point which describes a circle of radius r with uniform speed v.

How would you determine the inclination of the road-bed of a railway curve, that there may be no lateral pressure on the rails for a given speed of the train?

SECOND YEAR.

MATHEMATICS, I.

WEDNESDAY, DECEMBER 21ST:—MORNING, 9 TO 12.30.

Examiner, ... G. H. CHANDLER, M.A.

1. Draw the curves $y^2 = x^2 (1 - x_2)$, $\rho = \sin 2\theta$.

2. A point moves so that its distance from one fixed point $(-c, 0)$ is twice its distance from another fixed point $(c, 0)$. Show that the locus is a circle, and find its center and radius.

3. Find the equation of a straight line which passes through a given point (x_1, y_1) and makes a given angle ϕ with the line $y = m x + b$.

4. Find the equations of the lines which bisect the angles between the lines $y = 2x - 4$, $2y = x + 10$, reducing the results to the form

$$A x + B y = C.$$

5. Find (1) the equation of a line which touches $x^2 + y^2 = 4$ and is parallel to $y = 2x$.

Also (2) that of a line which touches $x^2 + y^2 - 6x - 8y = 11$ and is perpendicular to $y = 2x - 1$.

6. Find the equation of a circle which passes through the points $(-6, -1)$, $(0, 0)$, $(0, -1)$.

7. The equation $18x^2 - 8xy + 3y^2 + 8x - 6y - 5 = 0$ is referred to parallel axes through the point $(0, 1)$, the axes are then turned through an angle whose tangent $= 4$. Show that the equation becomes $2x^2 + 19y^2 = 8$.

8. In a parabola $y^2 = 4px$ is inscribed an equilateral triangle with one vertex at the origin. Show that the area of the triangle is $48\sqrt{3}p^2$.

9. Show that the line $y = mx + \frac{p}{m}$ touches the parabola $y_2 = 4px$ and that the co-ordinates of the point of contact are

$$\left(\frac{p}{m^2}, \frac{2p}{m}\right).$$

10. What is the (major) auxiliary circle of an ellipse? Prove that the ordinates of these curves, corresponding to a common abscissa, are as $b : a$, and hence deduce the area of an ellipse from that of a circle.

11. A straight line AB moves so that A and B describe two fixed lines containing a right angle. Show that any other point in AB describes an ellipse.

12. For what points of a hyperbola is the subtangent equal to the subnormal?

SECOND YEAR.

MATHEMATICS, II.

TUESDAY, APRIL 11TH:—MORNING, 9 TO 12.30.

Examiner,..... G. H. CHANDLER, M.A.

1. Find the equations of the tangents at the origin of the curve $ay^3 - 3ax^2y = x$

2. If $y = \log(y/x)$, then $(1-y)\,x\,dy = y\,dx$.

3. Find to 3 decimal places the root of the equation $x^4 - 10x^2 + x + 5 = 0$ which is nearly equal to 3.

4. Show that the least value of $a^2\tan^2\theta + b^2\cot^2\theta$ is $2ab$.

5. Show that

(1) $\int_1^2 \frac{dx}{\sqrt{4\ x-1}} = \cdot 457$, (2) $\int_1^2 \frac{dx}{4\ x-1} = \cdot 212$,

(3) $\int_1^2 \frac{dx}{\sqrt{4-x^2}} = 1.047$, (4) $\int_{\frac{1}{4}\pi}^{\frac{1}{3}\pi} \frac{d\theta}{\cos^2\theta} = \cdot 732$,

(5) $\int_0^{\frac{1}{3}\pi} \sec^3\theta \tan\theta\, d\theta = 2 \cdot 333$,

(6) $\int_0^{\frac{1}{4}\pi} \tan^4\theta\, d\theta = \cdot 119$, (7) $\int_0^{\frac{1}{3}\pi} \frac{d\theta}{\sqrt{1+\cos\theta}} = \cdot 771$.

6. Integrate $\frac{5\ (x+1)\ dx}{x^3-2\ x^2+x-2}$.

7. Show that $\int x^2 \cos x\, dx = 2\ x \cos x + (x^2-2) \sin x$.

8. (1) Sketch the curve $y^2 = 1 + x^2 y^2$; also draw its two asymptotes and the circle which touches the two parts of the curve and the two asymptotes.

(2) Show that $dy/dx = xy^3$, $d^2y/dx^2 = y^3\ (3\ y^2-2)$.

(3) Show that the whole area included between the curve and the asymptotes is equal to twice the area of the circle.

(4) The area between $x = -\frac{1}{2}$ and $x = \frac{1}{2}$ revolves about the axis of x. Show that the volume of the solid thus generated is $\pi \log 3$.

(5) Find the radii of curvature at the vertices of the curve, and hence draw the corresponding circles of curvature.

9. Find the moment of inertia (1) of a circle about a normal axis through the centre, (2) of a sphere about a diameter, (3) of any triangle about an axis through the vertex parallel to the base.

SECOND YEAR.

MATHEMATICS, III.

TUESDAY, APRIL 18TH :—MORNING, 9 TO 1.

Examiner,.....R. S. LEA, MA.E.

1. A point moves from rest so that the distance it has described at any time is always equal to one-fourth of the square of the time. Plot a curve illustrating this motion. Find graphically the velocity at the end of $2\frac{1}{2}$ seconds.

2. A point starts from rest and moves with a uniform acceleration of 18 feet per second. Find the time taken by it to traverse the 1st, 2nd and 3rd feet respectively.

3. A point moves uniformly in a circle, find the acceleration by means of the hodograph.

4. Two masses of 3 lbs. and 4 lbs. on a smooth horizontal table are fastened together by a light inelastic string 7 feet long, and are each describing a circle so that one point on the string is at rest. Find the point.

5. A small shell explodes in mid air in such a way that every fragment has the same velocity (1000 feet per second) away from the centre of the shell given to it at the instant of explosion. Prove that when the fragment which was projected vertically has reached its highest point, all the fragments are on the surface of a sphere of radius 31,250 feet ($g = 32$).

6. Two masses of 3 lbs. and 5 lbs. are hung by a string over a smooth pulley. Find the pressure on the bearings of the pulley axle.

7. A particle is sliding down a smooth tube inclined at an angle to the horizon, and it takes twice as long to descend any vertical distance as a particle falling freely.

Find the inclination of the tube.

8. Prove that the motion of a simple pendulum swinging in a small arc is simple harmonic.

A pendulum is carried upward with an acceleration equal to g. What will be the effect on its period ?

What would be the effect if it moved downward with the same acceleration ?

9. Show that :

(a) A single force and a couple acting in the same plane on a body cannot be in equilibrium.

(b) Any system of forces in one plane acting on a body may be reduced to a single force acting at any assigned point, and a couple.

10. A straight rod 4 inches long is placed in a smooth hemispherical cup, and when in equilibrium 1 inch projects over the edge. Find the radius of the cup.

11. State and prove a rule for finding the centre of gravity of any quadrilateral.

12. In the accompanying figure

(1) Find the reactions at A and E.

(2) Draw the stress diagram, and indicate (on the figure) the nature of the stresses.

(3) If a weight of 5 tons is placed at E and the support removed, find (*a*) the tension in a horizontal tie at B which will keep the frame in equilibrium ; (*b*) the direction and amount of the reaction at A.

THIRD YEAR.

MATHEMATICS, I.

WEDNESDAY, DEC. 21ST :—MORNING, 9 TO 12.30.

Examiner,.....G. H. CHANDLER. M.A.

1. Given the equation

$$11\,x^2 - 12\,xy + 6\,y^2 - 8x - 2y - 3 = 0$$

show

(1) That the centre is the point $(1, \frac{7}{6})$.

(2) That the principal axes of the curve make an angle $\tan^{-1}\frac{3}{2}$ with the co ordinate axes.

(3) That the equation reduced to its principal axes is $12\,x^2 + 90\,y^2 = 49$.

2. Find the equation of the tangent to the ellipse of question 1 at the point (1, 0).

3. Find the co ordinates of the extremities of the diameter of an ellipse conjugate to that which passes through the point (x_1, y_1) on the curve.

4. Find the asymptotes of the curve $xy = 1 - x^2$, and also the radius of curvature at the point (1, 0).

5. In the cissoid $y^2\,(a-x) = x^3$, or $x = a \sin^2\theta$, $y = a \sin^2\theta \tan\theta$, show that

(1) The area between the curve and the asymptote $= \frac{3}{4}\,\pi\,a^2$,

(2) The volume of this area about the asymptote $= \frac{1}{4}\,\pi^2\,a^3$.

6 Show that the maximum ordinate of the curve $(y - x^2)^2 = x^5$ is $4^4/5^5$.

7. Find the moment of inertia of a triangle about one side.

8. If $y = ae^{x} + be^{nx}$, then $d^2y/dx^2 = n^2y$.

9. Show how to integrate $\sin^{n}\theta \, d\theta$.

10. By substituting z for $\sqrt{1+x}$, integrate $\dfrac{dx}{(2+x)\sqrt{1+x}}$.

11. As x approaches 0, show that

$\dfrac{\log \sec x}{x^2}$ approaches $\frac{1}{2}$ and that $x^{\frac{2+x}{\log x}}$ approaches e^2.

12. Prove that $\sin^{-1} x = x + \dfrac{1}{2}\dfrac{x^3}{3} + \dfrac{1.3}{2.4}\dfrac{x^5}{5} + \ldots$,

and hence calculate the value of π to 3 decimal places.

THIRD YEAR.

MATHEMATICS, II.

TUESDAY, APRIL 18TH:—MORNING, 9 TO 12.30.

Examiner,.....G. H. CHANDLER, M.A.

1. A force F making an angle β with a plane of inclination θ, moves a body of weight W up the plane. Find F, the friction angle being ϕ.

2. A train moving at 40 miles per hour on a level track is brought to rest by friction in half a minute. Prove that the coefficient of friction is $\frac{11}{180}$.

3. By means of a friction brake applied to a shaft making 84 revolutions per minute, a weight of 100 lbs. is supported at the end of an arm 5 feet long. Find the horse-power absorbed by the friction.

4. How do you find the weight which can be raised by a given force applied to a telescopic (differential) jack-screw?

5. The gyration radius of a fly-wheel is 10 feet, the radius of its axle is 7 inches. When disconnected it is making 60 revolutions per minute. Show that it will turn about 84 times in coming to rest, the coefficient of friction being $\frac{1}{5}$.

6. Explain the meaning of instantaneous centre; also of centrode. How do you find the instantaneous centre of the connecting rod of a steam engine?

7. One of the 12 spokes of a wheel of a carriage going $7\frac{1}{2}$ miles per hour

is vertically above the centre, show that the speed of the extremity of the next adjoining spoke is 22 cos 15° feet per second.

8. A uniform cylinder rolls down an inclined plane. Find the acceleration of the central axis.

9. Describe any pendulum method of obtaining an accurate value of g.

10. A body moving with a given velocity, collides with a body of equal mass at rest. Find the velocities after impact.

Also, prove that the energy after impact is at least half of the energy before impact.

11. Water is flowing in a pipe 50 feet long with a velocity of 24 feet per sec., and is shut off in $\frac{1}{10}$ sec. by a stop valve. Show that the water pressure near the valve is increased by nearly 163 pounds per sq. in.

12. The radius of a vertical circle which is exposed to water pressure is $2\frac{2}{5}$ in, and the centre of the circle is 2 feet below the surface of the water. Find the pressure on the circle, and the centre of pressure.

THIRD YEAR ARTS, SECOND YEAR APPLIED SCIENCE.

EXPERIMENTAL PHYSICS.

SOUND, HEAT AND LIGHT.

FRIDAY, APRIL 7TH:—MORNING, 9 TO 12.

(*Not more than nine questions to be attempted.*)

1. What are the advantages of mercury as a thermometric substance?

A thermometer reads 100.5° in steam on a day when water boils at 100.39°; and —·8° in melting ice. What is the true temperature when it reads 60°? Explain how a correction can be made for stem exposure.

2. Describe the weight thermometer, and explain how by means of it to determine the coefficient of cubical expansion of a liquid, assuming that of glass known.

3. If 4490 cc of a gas at 101° under a pressure of 75.4 cm of mercury, have its pressure increased to 82.1 cm and its temperature raised to 225°, what will be its new volume?

4. Explain clearly what is meant by the statement that the *total heat* of evaporation of water is 606.5 + .305t.

Steam at 100° is passed into 120 gms of water at 10° till the temperature rises to 35°. How much has the mass of the water increased?

5. 45.1 gms of copper at 99.6° was immersed in 52.5 gms of water at 10°. The temperature of the water rose to 16.8°. What is the specific heat of copper?

6. What is an Indicator Diagram? Show that the area of the curve represents the work done during a stroke of the engine.

7. What is meant by reversible engine? Show that no engine can be more efficient than a reversible engine (*a*) according to Carnot's view of heat, (*b*) according to the Dynamical Theory.

8. Define *frequency, phase, wave-length,* and show how the velocity of a wave is connected with its wave-length and frequency.

How may the velocity of sound be determined by a resonance tube and a fork giving a known number of vibrations?

9. Give the formula for the number of vibrations per second in a stretched string.

The length of the *e* string of a violin is 33 cm, and it has a mass of 0.125 gm. Show that its tension when tuned to 640 vibrations per second is 6890 gms. (1 gm wt = 981 dynes.

10. Describe a spectroscope and the method of adjusting it.

Explain how the shifting of the bright lines in the spectra of certain stars has been utilized to determine their velocity in the line of sight.

11. Describe a method of determining *either* (*a*) the angle and refractive index of a prism, or (*b*) the focal lengths of a convex lens, and a concave mirror.

12. Describe and explain the phenomena of Newton's Rings.

FOURTH YEAR ARTS, THIRD YEAR APPLIED SCIENCE.

EXPERIMENTAL PHYSICS—ELECTRICITY AND MAGNETISM.

FRIDAY, APRIL 7TH:—MORNING, 9 TO 12.

(Not more than nine questions to be attempted).

1. Define the pole strength and magnetic moment of a magnet. Show how the magnetic moment of a magnet can be determined, given the horizontal component of the earth's magnetism. What assumption is generally made in regard to the position of the poles of a magnet?

2. Compare the action of a long solenoid conveying a current with a magnet. Draw the lines of force in both cases.

A solenoid 50 cms in length is uniformly wound with 500 turns of wire and a current of .5 amperes passed through it. Find the strength of the field at the centre of the solenoid.

3. Describe the relation between the magnetizing force and the total induction produced in a specimen of soft iron. Give approximate numerical values if possible. What is meant by magnetic hysteresis? How does Ewing's theory of magnetism account for the phenomena ?

4. Explain the construction and action of a D'Arsonval galvanometer. What are the advantages of the D'Arsonval galvanometer compared with the Thomson mirror galvanometer?

5. Show how to find the reduction factor of a tangent galvanometer by means of a copper voltameter, and explain the precautions to be observed in practice.

A current was sent through a tangent galvanometer in series with a voltameter for 30 minutes. The deflection on the galvanometer was kept steady at 30°, and the amount of copper deposited was found to be .1 grammes; find the reduction factor of the galvanometer. The electrochemical equivalent of copper is .000328.

6. A battery of 50 accumulators (of negligible resistance), each cell 2 volts, is used for lighting 50 16 c. p. lamps arranged in parallel. Each lamp takes .6 amperes. Find the resistance of each lamp, and the total resistance in the circuit; find also the horsepower at which the battery is working.

7. A coil of wire whose terminals are connected to a galvanometer is rotated uniformly on a vertical axis in the earth's field. Explain what happens during one complete revolution. Given the number of turns on the coil, the strength of the field, and the speed of rotation, find the induced E.M.F. for different positions of the coil.

8. Describe Faraday's ice pail experiment. What deductions can be drawn from it ?

9. Show that the capacity of an air condenser of two concentric metal spheres, radii a and b, is $\frac{a\,b}{b\,a}$. Deduce from this the capacity of two large flat plates of area A, distant d apart.

How is the capacity affected by the introduction of a dielectric like glass between the plates ?

10. Explain the phenomena that occur when an electrical discharge is sent through a vacuum tube at various pressures. What are the Kathode rays, and what are their properties?

11. Explain the action (1) of a receiver of a modern telephone; (2) of a microphone.

12. On what does the economic transmission of power to great distances depend? Illustrate your answer, if possible, by a numerical example.

A 1,000 volt dynamo drives a distant motor. The current in the circuit is 10 amperes, and the total resistance of the circuit is 20 ohms. Find the efficiency of transmission, and the heat losses in the circuit.

THIRD YEAR.

ELECTRICAL ENGINEERING.

PHYSICAL LABORATORY WORK.

FRIDAY, APRIL 14TH :—AFTERNOON, 2 TO 6.

(Four questions to be answered and a practical examination on one of the four.)

1. Show how to find the moment of a magnet by the torsion balance.

2. Describe the magnetometer method of finding the value of the horizontal component of the earth's magnetism.

3. Show how to construct a one ohm coil from the given wire Show how to accurately measure the difference in resistance between the coil and a standard ohm by the Carey-Foster bridge.

4. Describe a method of calibrating a voltmeter, using a potentiometer and a standard cell.

5. Describe a method of determining the value of a direct current in absolute measure. How would you apply this method to finding the current through a 32 cp. lamp on the 100 volt circuit.

6. Describe the Siemens' electrodynamometer, giving the advantages of the instrument. Show how to use it for measuring direct currents. Explain how to find its constant by the use of a copper voltameter.

7. How would you proceed to find the constant of a D'Arsonval galvanometer. Show how the volts on a lighting circuit may be measured by it, using the potentiometer method of shunting.

8. Show how to find the relation between the watts absorbed and the heat given out in a coil of wire.

9. Explain how to find the reduction factor of a galvanometer by means of the gas voltameter.

FOURTH YEAR.

ELECTRICAL ENGINEERING.

PHYSICAL LABORATORY WORK.

FRIDAY, APRIL 14TH:—2 TO 5.

(Not more than six questions to be attempted.)

1. Describe in detail one method for the determination of the hysteresis loss in a specimen of soft iron. Give Steinmitz's law. How would you test it?

2. Give an account of Lord Rayleigh's determination of the electro-chemical equivalent of silver in absolute measure.

Describe the arrangement of the coils, and show how the force on the suspended coil was calculated.

3. What is the chief source of error in the use of a saturated solution in the Clark cell? How may it be very simply avoided?

Explain briefly the precautions necessary in preparing the ingredients for the "crystal cell."

4. Describe the methods used for the accurate comparison of capacities.

Discuss the question of absorption in condensers, and show how to determine the insulation resistance of a condenser by the method of leakage.

5. Describe the construction and use of a low range potentiometer, and show how to calibrate a milliammeter by its means.

6. How would you construct and test a ten thousandth ohm resistance.

On what does the accuracy of the comparison with a standard coil depend?

7. Discuss the effect of temperature and constitution on the resistance of metals.

How would you accurately determine the temperature coefficient of a standard ohm?

8. Describe the construction and action of a Weston voltmeter. What is the effect of temperature and of a stray magnetic field on the readings? Under what conditions does a volmeter not give the true P.D. between two points?

9. Discuss the efficiency of an arc, incandescent and Nernst lamp as light sources. How does the efficiency of a amp vary with the voltage, and how would you proceed to test it?

SECOND YEAR.

HISTORY OF ARCHITECTURE.

THURSDAY, APRIL 13TH:—9 TO 12 A.M.

Examiner,.....S. HENEST CAPPER, M.A.

N.B.—Five questions only to be attempted. Marks will be given for clear sketches in illustration.

1. Give some account generally (without detaled descriptions of special buildings) of ancient Roman Architecture, both as regards construction and decorative elements.

2. Compare and contrast an Egyptian temple wth a Greek temple, and both with a Gothic cathedral, adding a notes to their historical dates.

3. How did the Cistercian Order arise? and what was its influence on the development of mediæval architecture? Add to your answer a sketch plan of a typical Cistercian Abbey, naming the various buildings included.

4. What do you understand by "*Byzantine*" architecture? and what by "*Romanesque*"? Mention characteristic constructive features of either style, with references to important buidings in the style, adding their approximate dates.

5. Trace the development of Gothic architecture as regards the forms of window tracery and vaulting.

6. Explain with illustrative sketches (where necessary) the following terms:—*Pylon; peristyle; sexpartite-vaulting; pendentive; clerestory; flying-buttress; cloister; chevet.*

7. Describe briefly, with sketches of plan, etc., mentioning their dates, any two of the following buildings:—

(1) The Great Pyramid;

(2) the Erechtheum;

(3) the Pantheon;

(4) Westminster Abbey;

(5) St. Peter's (Rome);

(6) any building (important architecturally) not otherwise included in your answers.

THIRD YEAR.

HISTORY OF ARCHITECTURE:—ITALIAN RENAISSANCE.

THURSDAY, APRIL 13TH:—9 TO 12 A.M.

Examiner,..... .....S. HENBEST CAPPER, M.A.

(*Five questions only to be answered.*)

1. Compare the rise of Renaissance Architecture in Italy with the adoption of the style in France and in England.

2. Give some description of any two important Renaissance churches in Italy other than St. Peter's (Rome) and the Duomo (Florence).

3. Estimate the influence upon architecture of the arts of sculpture and of painting during the 15th and 16th centuries in Italy, mentioning the names of architects who achieved distinction also in one or other of these arts.

4. Name (adding architect and date) *three* important Renaissance palazzi in (*a*) Florence, (*b*) Venice, (*c*) Rome; and give a sketch elevation of any *one* of them.

5. Give a brief account, with dates and mention of their principal works in architecture, of (*a*) Brunelleschi, and (*b*) Michael Angelo, estimating their influence respectively upon contemporary architecture.

6. Write a note upon Florence, Venice and Rome as centres of Renaissance Architecture, pointing out the divergences of style characteristic of these cities, and suggesting any historical reasons for such differences.

THIRD YEAR.

HISTORY OF ARCHITECTURE: RENAISSANCE. (*Second Paper.*)

THURSDAY, APRIL 13TH :—2 TO 5 P.M.

Examiner,.....S. HENBEST CAPPER, M.A.

(*Six questions only to be attempted. Sketches must be clear, but need only be completed enough to show the design.*)

1. Compare the architecture of Francis I with that of Louis XIV in France, mentioning three important buildings of either period with approximate dates.

2. Sketch a dormer window illustrative of the style of the Early French Renaissance.

3. Describe the Escorial briefly, mentioning its architect and date, and adding some criticism of the design externally.

4. Compare the architecture of the 16th century in England with that of France.

5. Give a brief account of Inigo Jones, estimating his influence upon architectural development in England.

6. Give some account of St. Paul's Cathedral (London).

7. Sketch a bay window such as you would consider characteristic of an Early Renaissance building in England.

8. Comment briefly upon the "Old Colonial" style of architecture in America, noting any specially characteristic features and discussing its adaptability for modern domestic work.

SECOND YEAR.

HISTORY AND THEORY OF ARCHITECTURE.

THURSDAY, APRIL 13TH:—2 TO 5 P.M.

Examiner,..... S. HENBEST CAPPER, M.A.

[*Six questions only to be attempted. Sketches (clear but not elaborate) are expected wherever needed in illustration of answers.*]

1. Describe *briefly* the principal buildings on the Acropolis at Athens, mentioning the orders of architecture used in them; and (so far as known) their designers and approximate dates.

2. Viollet-le-duc claims that Gothic Architecture is based upon the principle of *elasticity* in construction. Explain and amplify this statement.

3. Enumerate, with illustrative sketches, three typical forms of Romanesque vaulting, and point out the modifications more immediately resulting from the adoption of the pointed arch.

4. What political and social significance attaches to the rise of the great Gothic Cathedrals of France? and how do you account for any peculiarities of plan characteristic of English Cathedrals?

5. Write a note upon the transference of wood forms to stone architecture, with special reference to the Doric Order.

6. "Architectural design is largely composition of lines." Criticise this statement, pointing out characteristic lines made use of in architectural composition.

7. Give a brief account of the *basilica* of Pagan and of Christian architecture.

8. Write brief notes, with illustrative sketches, in explanation of the following terms:—lotus-bud capital; proto-doric; distyle-in-antis; attic base; four-centred arch; lierne; tierceron; entasis; metope; chevron moulding; wall-arcade; trefoil-arch.

SECOND YEAR.

THEORY OF ARCHITECTURE.

SATURDAY, APRIL 15TH:—9 TO 1 A.M.

Examiner,.....S. HENBEST CAPPER, M.A.

1. To embellish the lower storey of the central building of McGill College, a tetrastyle Greek Doric portico was added some years ago; its construction is wood. To avoid interfering with the windows of the existing building, the usual proportions of the Doric Order were departed from. The following are the main dimensions:—

Outside columns, centre to centre,	32 ft. 2 ins.
Centre intercolumniation do	11 ft.
Column, lower diameter	2 ft. 11 ins.
do height (step to architrave)	13 ft. 10 ins.
Entablature—height in all	6 ft. 2 ins.

Taking the same centres for outside columns, re-design this portico (tetrastyle, without pediment) in stone, adhering to strict classic proportions.

Drawings (elevation with plan) to be to ¼ inch to the foot; to be in pencil; and to be finished in detail no further than is needful in order to be clear and intelligible. On the drawings mark the level of actual entablature (top and bottom) by drawing two lines across.

2. Sketch (in geometrical elevation with half plan showing abacus) two capitals, one Greek Ionic, one Roman Corinthian, upper radius of column in drawing to be ¾ inch.

3. Sketch (in geometrical elevation showing profile) a cornice with modillions and dentils, total height (in drawing) 3 inches.

FOURTH YEAR.

ARCHITECTURE.

THURSDAY, APRIL 30TH:—MORNING, 9 TO 12.30.

Examiner,.....S. HENBEST CAPPER, M.A.

A. Draw sketch plans for a suburban house (3 public rooms, 5 or 6 bedrooms), under the following conditions:—

Plot 75 ft. square; roadway bounding north side; principal

views to S.E., S. and S.W. (these to be studied in connection with public rooms, one of which may be on upper floor). The site is supposed to be below level of roadway, so that with the main floor about 3 feet above road level, the basement would be completely above ground, with north side, however, commanded from the road.

Plans only required (basement, main and first floors; attic floor may be omitted); to be drawn roughly to (small) scale, with dimensions of principal rooms figured.

Drawings (on tracing paper and in pencil, if preferred) to be sketch plans only, such as an architect might "rough-out" freehand in conversation with a client to show how a site might be utilized.

Add a note in the briefest terms pointing out the special advantages embodied in your plan.

B. Answer *four* of the following questions:—

1. Contrast the requirements of modern domestic planning with those accepted in the "Palladian" style of last century, pointing out the resulting characteristics in external architecture.

2. The Elizabethan mansion is generally held to be the earliest Renaissance Architecture of England. Consider the truth of this view as respects planning.

3. Sketch the ground plan of a Pompeian house of the more important class, and note how far the type may be held to survive in modern times.

4. Write a note upon the "Old Colonial" style, its historical derivation, and its suitability to modern requirements.

5. Trace the history of the "hall" in domestic architecture, and discuss its applicability to modern planning.

6. Estimate the influence of Inigo Jones on English domestic architecture, mentioning some of his works.

FOURTH YEAR.

HISTORY OF SCULPTURE.

TUESDAY, APRIL 18TH:—9 TO 12 A.M.

Examiner,..... .....S. HENBEST CAPPER, M.A.

(*Candidates are not expected to attempt all the questions.*)

1. Discuss the artistic limitations of sculpture in regard to (*a*) choice of subject, (*b*) pose and grouping, illustrating your answer by

reference to Hébert's statue of Maisonneuve in Montreal, or other modern statue with which you are acquainted.

2. What were the sculptural enrichments of the temples of Zeus at Olympia, Apollo at Phigaleia, and the Theseum at Athens? Mention (without detailed descriptions) the subjects of the sculpture, noting especially where it was placed on the buildings.

3. Contrast the rendering of animal forms with that of the human figure in Egyptian and Assyrian bas reliefs.

4. Describe the eastern portion of the Parthenon frieze, adding a note as to its interpretation.

5. What is meant by contrasting narrative sculpture with dramatic; compare Egyptian sculpture with Greek as illustrating this distinction, and mention with brief descriptions, *three* well-known examples of early Egyptian portrait sculpture.

6. Give some criticism of the rendering of the nude form and of drapery in the pedimental sculptures of the Parthenon.

7. What are the special characteristics of the Ionian School in early Greek Sculpture; mention sculptors of the 5th or 4th centuries, whose works are probably to be deemed the most perfect expression and outcome of this school.

8. Give some account of Myron and his works.

9. Describe the Hermes of Praxiteles, and estimate in the history of Greek Sculpture the influence of Praxiteles and of Scopas.

THIRD AND FOURTH YEAR EXAMINATIONS.

GRAPHICAL STATICS.

Examiners, ... { HENRY T. BOVEY, LL.D., M.INST.C.E.
E. G. COKER, B.Sc., A.M.INST. C.E.

1. Two loads, the one of 2 tons the other of 4 tons, roll over a girder of 18 ft. span, at a fixed distance 4 ft. apart. Draw diagrams giving the maximum shearing forces and max. *BM* at each point.

If a third load of 3 tons follows the 4 ton load at a distance of 4 ft., find, *graphically*, the max. *BM* at 6 ft. and at 12 ft. from the end of the girder.

2. The point O in Fig. 1 is a fixed point of suspension. If the loads connected with this point of suspension are as indicated in the diagram, determine the magnitude of P and the direction and magnitude of the resultant force at the point of suspension.

3. Fig. 2 represents a steel truss of given dimensions, carrying loads of 1, 2, 3, 4 and 5 tons, as indicated. Draw a diagram giving the stresses in all the members and indicating which are in tension and which in compression.

4. Fig. 3 represents a cantilever truss loaded as indicated and of the specified dimensions; the joint X being tied back as shown and the joint Y resting against the wall. Draw the stress diagram and find the direction and magnitude of the resultant reaction at Y.

5. In the crane represented by Fig. 4, the post is 10 ft. high and the jib AB and stay AC are inclined at angles of 60° and 30°, respectively, to the horizontal. The stay CD is attached to the platform at D and DB = 10 ft. Find the stresses on the crane members when a weight of 20 tons is suspended from A (a) neglecting the tension on the chain, (b) assuming that the tension of the chain is taken into account and that the chain passes from A to the middle point of the post CB. The chain at A is in two falls.

Find also the weight of the counterpoise D, so that the post may not be exposed to a cross stress (disregarding the weight of the crane and platform).

6. Draw a diagram giving the stresses in all the members of the braced frame shown by Fig. 5. Also find the direction and magnitude of the resultant reaction at the toe.

7. Fig. 6 represents an A truss for a span of 80 ft. The depth of the truss is 30 ft.; the load at each of the panel points in the horizontal chord is 60,000 lbs. Find the stress in every member.

8. Fig. 7 represents a braced iron pier loaded as indicated. Draw stress diagrams (a) with $P = 40$, $Q = 8$; (b) with $P = 24$, $Q = 8$; (c) with $P = 16$ and $Q = 8$. In each case give the magnitude and character of the stresses in the members X and Y.

9. Fig. 8 represents a roof truss for a span of 30 ft. Find the load which must be placed at D to prevent distortion, (a) when there is a vertical load of $\frac{1}{4}$ ton at B and at C; (b) when there is a normal wind pressure of $\frac{1}{4}$ ton at B and $\frac{1}{8}$ ton at A and at C. Assume the end A to be fixed and that rollers are placed under the end B.

10. Fig. 9 represents a roof truss for a span of 64 ft., the depth of the

truss being 24 ft. The horizontal tie XL is 16 ft. below the apex of the roof. Each rafter carries a uniformly distributed load of 2,000 lbs., and the normal wind pressure upon a rafter is 100 lbs. per lineal foot. Determine, *graphically*, the stresses in all the members, assuming that the foot of one of the rafters is fixed and that rollers are placed under the foot of the other rafter.

When a vertical load only is acting, show how the stress diagram will be affected if the strut HK is removed.

11. Fig. 10 represents a bridge truss for a span of 80 ft. Draw the stress diagram when the loads at each of the panel points are as indicated.

12. Explain the method of sections, and apply it to the determination of the stresses in the members of the frames represented by Figs. 11a and 11b, cut by the section MN.

THIRD AND FOURTH YEAR EXAMINATIONS.

THEORY OF STRUCTURES (*Paper I.*)

Examiners,..... { HENRY T. BOVEY, LL.D., M. INST. C.E.
E. G. COKER, B.Sc., A.M.INST. C.E.

1. State what you know as to the results of tests on the breaking strength of metals under repeated loads and repeated reversal of the loads, and give any formulæ which have been deduced for such cases.

In a mild steel tension member for a Baltimore truss, the stress varies from a max. of 157,000 lbs. to a min. of 81,000 lbs. Find the proper sectional area of the member.

2. Having given the principal stresses at a point in the general case of stress in two dimensions, show that the stress across any plane through the point is represented by the radius vector of an ellipse.

At a point within a solid the principal stresses are tensions of 250 lbs. and 160 lbs. per sq. inch. Find the stress on a plane inclined at 30° to the plane of greatest principal stress.

3. The section ABC of a reservoir wall is a right-angle triangle, has a vertical face AB, and the hypotenuse AC is the water face. Find the direction and magnitude of the resultant pressure upon AC when the water rises to the top of the wall, which is 24 ft. high.

If the masonry weighs 125 lbs. per cub. ft., find the width of the base BC (a) so that the stress may nowhere exceed 12,000 lbs. per sq. foot, (b) assuming q to be $\frac{1}{3}$.

4. Deduce the formula

$$T_1 = T_2 \, e^{\mu a} - \frac{\mu a}{g} v^2 \left(e^{\mu a} - 1 \right)$$

and determine the limiting speed.

5. The belt pulley of an engine is 6 ft. in diameter, and the engine makes 80 revolutions per minute. What width of belt would be required to transmit 30 H.P. from the pulley, supposing the belt to be $\frac{3}{8}$ of an inch in thickness, and the tension on the slack side to be $\frac{4}{10}$ of that on the tight side of the belt? The stress on the belt is not to exceed 500 lbs. per sq. in. of section and the centrifugal effect may be disregarded.

6. Deduce the formula

$$\frac{f}{y} = \frac{M}{I} = \frac{E}{R}$$

stating all the assumptions you make.

In a built up girder, the two flanges are equal, and each consists of two 3 in. × 3 in. × $\frac{1}{2}$ in. angle irons connected with a 11 in. × $\frac{1}{2}$ in. web. Calculate the moment of resistance of the section, the allowable stress per sq. in. being 4 tons.

7. A steel 3 in. × $\frac{3}{4}$ in. eye-bar has a 4 in. pin-hole and an 8 in. head. The stress along the bar is 30,000 lbs., but its line of action is $\frac{1}{2}$ in. from the axis of the bar. Find the max. and min. stress in the main body of the bar and also in the metal at a diametral section through the pin-hole at right angles to the line of stress.

8. How would you proceed to determine the moment of resistance of an irregular section such as a rail?

9. The section of a cast-iron girder, and maximum safe tensile and compressive stresses being given, explain how to determine its moment of resistance to bending.

The dimensions of the section of a cast iron girder are the following: top flange, 4 ins. × 1$\frac{1}{2}$ ins.; bottom flange, 12 ins. × 1$\frac{3}{4}$ ins.; web, 16 ins. × 1$\frac{1}{2}$ ins. Determine the moment of resistance, the greatest permissible tensile and compressive stresses being 2$\frac{1}{2}$ and 7$\frac{1}{2}$ tons per sq. inch, respectively.

If the girder be 20 ft. long and is supported at its two ends, find the greatest safe load which it will carry, when uniformly distributed along its length.

10. Show how to determine the diameter of the shaft required to transmit a given horse-power at a given number of revolutions per minute.

Find the diameter of a shaft to transmit 50 H.P. at 100 revolutions per minute, allowing a shearing stress of 4.5 tons per sq. inch.

11. A hollow shaft, the external and internal diameters of which are 20 ins. and 8 ins. respectively, runs at 70 revolutions per minute, with a surface stress of 6,000 lbs. per square inch. Find the twisting moment and H.P. transmitted.

Compare its torsional strength with that of a solid shaft of same length and weight.

12. State and deduce Gordon's formula. What modification was introduced by Rankine?

Apply the formula to determine the buckling strength of a 2 in. round steel bar, 30 diameters in length, with pin-ends.

If the stress is nowhere to exceed 12,000 lbs. per sq. in., find the load for which the max. deviation of line of load from axis will not exceed .125 in.

13. For a thick cylinder deduce the relations

$$f_1 (r_0^2 - r_1^2) = 2 p_0 r_0^2 - p_1 (r_1^2 + r_0^2)$$
$$f_0 (r_0^2 - r_1^2) = p_0 (r_1^2 + r_0^2) - 2 p_1 r_1^2.$$

The cylinder of an hydraulic accumulator is 8 in. in internal diameter; the water pressure is 2,000 lbs. per sq. inch. Determine the thickness you would adopt if the working stress in the metal is not to exceed 4 tons per sq. inch.

14. A beam of length l, carrying a load of w lbs. per lineal foot, is fixed at one end and rests upon a support at the other. Draw diagram of max. S.F. and B.M.

15. A horizontal girder AB, of length l, is fixed at both ends and carries a load P at a point C. If $AC = a$, find the deflection at P.

THIRD AND FOURTH YEAR EXAMINATIONS.

THEORY OF STRUCTURES (*Paper II.*)

Examiners,..... { HENRY T. BOVEY, LL.D., M. INST. C.E.
E. G. COKER, B. Sc., A.M. INST. C.E.

1. Fig. 1 represents a compound A truss of 160 ft. span, the depth at the centre being 40 ft. The load at the foot of each vertical is 4 tons. Draw diagram giving the stress in every member.

2. (*a*) Fig. 2 represents a rivetted truss for a span of 126 ft. c. to c. of *end* pins. The truss is 28 ft. deep and is divided into six panels, each of 21 ft. The trusses are 17 ft. c. to c. The live and dead loads are 4,000 and 1,600 lbs. respectively, per lineal foot of span Prepare tables of maximum stresses.

(*b*) Fig. 3 shows the lower lateral system of the bridge in (*a*). The wind load on the system is assumed to be 450 lbs. per lineal foot when the span is loaded and 200 lbs. per lineal foot when the span is empty. Find the maximum wind stresses in the bottom. chords and diagonals, assuming the wind load to act as an advancing load. Find also the reversing tendency of the end panels of the bottom chord on the windward side when the dead load only is acting. The diagonals are to be tension members.

(*c*) The wind load on the upper lateral system is assumed to be 150 lbs. per lineal foot of span. Discuss the effect of the wind on the portal bracing. Also find the effect of the transferred wind load on the inclined end posts and bottom chords (Fig. 4).

3. Show how to design a floor beam for the bridge in the preceding question.

4. Fig. 5 represents one of the trusses for a bridge of 12 ft. span. The bridge panel load is 6 tons; the train panel load is 4 tons. Determine the lengths of the verticals and the stresses in all the members if the truss is designed (*a*) so that the stresses in each member of the lower chord may be 80 tons, (*b*) so that the stresses in each diagonal may be the same and equal to zero.

5. Fig. 6 represents the half of a cantilever bridge spanning the Agarno River, Japan. Find the erection stresses in the members $U_4\ U_3$, $U_2\ L_3$, $U_1\ U_2$, $L_0\ M_1$, $L_0\ L_2$, $U_0\ L_0$, due to cantilevering out the suspended span at the various panel points:—36,500 lbs. at L_8 and L_7; 25,000 lbs. at L_6 and L_5; 26,000, 29,000, 35,000 and 42,000 lbs. at L_4, L_3, L_2 and L_1 respectively.

Find also the stresses in the same members due to the dead load on the suspended span after the span is connected at the centre. The total suspension load at L_4 for this case being 108,000 lbs.

6. Fig. 7 represents an 8 panel swing bridge, 96 ft. long and 16 ft. deep. The load on the bridge when the bridge is open is as indicated. Find the counterweight and draw a diagram showing the stresses in every member.

7. Enunciate and prove the General Theorem of Three Moments. Apply the Theorem of Three Moments to determine the reactions at the supports for the bridge in the preceding question when the bridge is closed. Draw a diagram showing the stresses in all the members.

If the third support is 1 in. out of level, find the corresponding change in the reactions.

8. Fig. 8 represents a half bridge of 128 ft. span, suspended from the point M and hinged at R. The depth at M is 16 ft. The upper ends of the verticals lie in an arc of parabola, the point R being the vertex. The bridge and train panel loads are 6 and 4 tons respectively. Find the stresses in all the members between the sections $X X$ and $Y Y$.

THIRD AND FOURTH YEAR EXAMINATIONS.

THEORY OF STRUCTURES (*Paper III*).

Examiners, ... { HENRY T. BOVEY, LL.D., M.INST.C.E. / E. G. COKER, B.Sc., A.M.INST.C.E.

1. A horizontal platform, uniformly loaded, is suspended from two cables by vertical rods, show that the curves of the cables must be parabolas.

2. If (x, y) are the co-ordinates of the point of suspension P with respect to the lowest point O of a cable in Question 1, show that the length PO (s) of the cable is approximately

$$x + \frac{2}{3}\frac{y^2}{x}$$

and hence that the change of dip dy, corresponding to a change of ds in the length is

$$\frac{3}{4}\frac{x}{y}\,ds$$

The cables of a suspension bridge for a span of 200 ft. have a dip of 40 ft. Find the length of a cable, and also find the change of dip corresponding to a change of 30° C. from the mean temperature, the coefficient of linear expansion being .000012 per degree Cent.

3. The suspension bridge in Question 2 is supplied with an auxil-

iary truss 4 ft. deep. Show that the intensity of flange stress at the centre developed by the change of temperature is 717 lbs per sq. in. (E = 24,000,000 lbs.)

If the live load is 4000 lbs. per lineal foot of span, determine the max. S. F. and B. M. to which the truss is subjected.

4. A bridge 360 ft. long consists of a central span of 160 ft. and two side spans each of 100 ft. The lowest points of the cable are in the same horizontal plane, 70 ft. above mean water level, 30 ft. below the summit of the abutments. On each side of the platform there are two cables from which the platform is suspended by vertical rods 10 ft. apart. The bridge load is 4000 lbs. per lineal ft. of span. The train load is 6000 lbs. per lineal foot of span. When the train load covers the whole of the centre span, find

(a) the max. and min. stresses on the cables;

(b) the overturning moment on the pier at the mean water level.

When the train load covers the bridge between the lowest points of the centre span and a side span, find the stress on a suspender in each span.

Assume that no distortion of the cables takes place.

5. Show that the limiting ratios of a pair of conjugate stresses in mass of earthwork are given by

$$\frac{\cos\theta \pm \sqrt{\cos^2\theta - \cos^2\varphi}}{\cos\theta \mp \sqrt{\cos^2\theta - \cos^2\varphi}}$$

The slope of a cutting being 1 in 1½, the weight of earth 130 lbs. per cub. ft., and its angle of repose 30°; find the overturning moment upon a retaining wall 4 ft. high, at the bottom of the slope.

6. Show what is meant by a line of resistance in a dam or retaining wall. In the case of a masonry dam, what considerations determine the width of the dam at any given depth? Show generally the form of section to which these considerations lead.

7. A masonry arch for a span of 40 ft. and a rise of 10 ft., springs from abutments with vertical faces and 10 ft. thick. The masonry has a depth of 3½ ft. at the crown, is level from abutment to abutment, and weighs 150 lbs. per cub. ft. The intrados is a parabola. The centres of resistance at the springing and at the crown are 4½ ft. from the inside face of the abutment and 2 ft. above the crown, respectively. Find the resultant pressures at the crown, at the springing and in the vertical aligning with the inside face of an abutment.

8. What is meant by a transformed catenary?

A concrete arch for a span of 45 ft. and a rise of 6 ft., has a depth of 9 ft. of masonry over the crown. The concrete weighs 144 lbs. per cub. foot. Determine the transformed catenary and the thrusts at the crown and springing.

9. If ABC is the axis of an arched rib, and if a vertical intersects the linear arch, the axis and the horizontal AC, in the points D, E, and F, show that $H.\ DE = M$.

10. An arched rib with hinged ends is loaded with weights concentrated at different points on the rib. Show how to determine graphically the thrust and shear at any point of the rib.

11. An arched parabolic rib of span l has both ends fixed and carries a weight P concentrated at the horizontal distance a from the centre. Show that the vertical reactions at the supports are

$$\frac{P}{4}\ \frac{(2l \pm a)\ (l \mp a)^2}{l}$$

and that the horizontal thrust is

$$\frac{5}{32}\ P\ \frac{(l^2 - a^2)^2}{k\ l^3}$$

12. An arched parabolic rib, of 64 ft. span and 8 ft. rise, carries a load of 2 tons at the centre and at 8 and 16 ft. measured horizontally from the centre. Determine the thrusts and shears at the load 8 ft. from the centre.

THIRD YEAR EXAMINATIONS.

TESTING LABORATORY WORK.

SATURDAY, MARCH 25TH, 1899.

Examiners, ... { HENRY T. BOVEY, LL.D., M.INST.C.E.
E. G. COKER, B.SC., A.M.INST. C.E.

1. Describe by aid of sketches either the Buckton testing machine or the Emery testing machine.

2. Sketch stress strain-diagrams roughly to scale for

(i) mild steel,
(ii) wrought iron,
(iii) tool steel,
(iv) cast iron,

3. Show how you would proceed to carry out the following tests, stating how the test piece should be formed and secured in the machine.

State also what appliances and what assistance you would require

(i) Tension test. (ii) Compressive test. (iii) Torsion test.

4. The following observations were taken during a tensile test of a piece of material.

Original section = 1.00″ × 0.5″ Original length = 8.00″
Final " = 0.81″ × 0.39″ Final " = 9.40″

Load in lbs.	Extensions in inches.	Load in lbs.	Extensions in inches.
0	0.000	15000	0.0184
2000	0.0012	16000	0.1000
4000	0.0024	18000	0.2200
6000	0.0037	20000	0.3300
8000	0.0049	22000	0.5500
10000	0.0060	24000	1.0800
12000	0.0073	24600	Broke
14000	0.0085		

Calculate Young's Modulus (E), the stress at the elastic limit, at maximum load, and reduction of area per cent.

Judging from the above results, what should you say the material is?

5. Describe a method of determining the breaking strength of a large timber beam, and sketch the apparatus used for measuring the deflections.

A timber beam 9 ins. square section and 12 feet six inches long between the supports, gave the following results under test, the load being applied at the centre.

Load in lbs.	Deflection in inches.	Load in lbs.	Deflection in inches.
0	.014	2000	.208
500	.052	2500	.249
1000	.102	3000	.297
1500	.158		

Calculate Young's Modulus.

6. How would you proceed to make a tension test of a piece of wire if the only available apparatus were a set of weights up to 7 lbs., a steel rule and a pair of beam scales?

7. Describe any instrument with which you are acquainted for measuring small extensions in a test-piece under simple pull or push.

8. Show that in a shaft subjected to twist within the elastic limit, the modulus of rigidity is determined by the formula

$$C = \frac{32\,Tl}{\pi\, d^4\, \phi}$$

where l = length of shaft
d diameter
T twisting moment
ϕ = angular displacement.

Determine the modulus of rigidity from the following data :

Test-piece, a turned bar of Bessemer steel; length under measurement, 10.25 in.; diameter, 0.747 inches.

Twisting Mt. in lbs.	Readings.	
0	0	
15	26	
30	51	18.6 divisions. = one minute of arc.
45	77	
60	103	
75	128	
90	154	

DEGREE EXAMINATIONS.

HYDRAULICS (*Paper I*).

Examiners,..... { HENRY T. BOVEY, LL.D., M.INST.C.E.
E. G. COKER, B.Sc., A.M.INST.C.E.

1. Investigate an expression for the discharge through a rectangular orifice, taking into account the effect due to velocity of approach. Find the discharge through a sharp edged orifice 6 ins. square in a vertical plate, the centre of the orifice being 15 ins. below the surface of the water, (*a*) if the velocity of approach is 1 ft. per second, (*b*) if the channel of approach is 3 ft. wide by 2 ft. deep.

2. Find the amount of water in gallons per day which will be delivered by a 24 in. cast iron pipe, 3 miles in total length, when the surface of the water under which it discharges is 175 ft. below the surface of the reservoir from which it is drawn (1) when the mouth is full open, (2) when restricted by a conical nozzle to one-fourth the area.

3. How long will it take to lower the surface of a reservoir of 640,000 sq. ft., area 3 ft., through a 90° V notch 4 ft. deep.

What advantage is claimed for such a notch? (c = .6).

4. State the laws of fluid friction. Explain fully what is meant by the "coefficient of friction" (f), and discuss the various formulae expressing its value.

5. Explain the meaning of "steady flow," "mean hydraulic radius," and "virtual slope."

Deduce the expression

$$\frac{h}{l} = i = \frac{f}{g}\,\frac{v^2}{r}$$

for the virtual slope of a pipe of radius r, and in which v is the mean velocity of steady flow.

A clean 6 in. pipe has a virtual slope of 1 per 400. Taking $f = .005$, find the velocity of steady flow, the discharge, and the energy absorbed in frictional resistance in 1000 feet.

6. A 6 in. pipe, 500 ft. long, discharges into a 3 in. pipe, also 500 ft. long. The effective head between the inlet and outlet is 10 feet. Find the discharge, taking $f = .0064$, and making allowance for the resistance at the inlet.

7. A pipe connects two reservoirs, the effective head being h. Deduce the relation, $2\,g\,h = v\,(1 + n + F)$.

Take $n = .5$, and $f = .001$, find the amount of water in gallons per day which will be delivered by a 24 inch cast iron pipe, 15,000 ft. in total length, when the water surface at the outlet is $87\frac{1}{2}$ ft. below the water surface at the inlet.

8. If the water from the pipe in the preceding question, instead of flowing into a reservoir, is made to drive a reaction turbine, what must be the velocity of flow in the pipe to give a max. speed? What will be the H.P. of the turbine if its efficiency is .84?

9. A third reservoir is connected with the system in Question 7, by means of a 24 in. cast iron pipe, 7,500 ft. long, joined to the main at the middle point. The water surface of this intermediate reservoir is 50 feet above that of the lowest reservoir. Discuss the distribution.

10. A fire engine pumps water through a 400 ft. length of $2\frac{1}{2}$ in. bore at the rate of 12 ft. per second, and discharges through a 1 inch nozzle. Find the pressure in the hose, and the pumping H.P. Also find the force required to hold the nozzle. ($f = .00125$).

11. Give a short account of Thomson's explanation of the winding of rivers in alluvial plains.

12. Give the ordinary formula for the flow of water in open channels.

What head is required to give a velocity of 4 ft. per sec. in a semi-circular channel of 3 ft. diameter and 5000 ft. long, f being .0064.

13. Given the sectional area of the water-way in an open channel, show how to determine the depth so that the flow may be a maximum.

A wooden sewer, with a section in the form of an isosceles right angled triangle, rests upon its hypotenuse, which is 4 ft. in length. Find the height to which the water must rise to give (*a*) a max. velocity of flow, (*b*) a max. discharge.

14. Apply the general equations of fluid motion to deduce Bernouilli's Theorem.

15. Assuming that the water in a pipe flows in the form of thin concentric cylindrical shells, and assuming also Navier's Hypothesis as to the surface resistance between any two consecutive shells, show that the velocity of flow (*a*) at any distance x from the centre may be expressed in the form $u = B x^2 + C$, B and C being certain coefficients.

Hence, also, if $U_{max.}$ and U_s are the velocities of the central filament and at the pipe surface, show that

$$U_s + U_{max.} = \text{twice the mean velocity,}$$

16. Assuming the fundamental differential equation of steady motion in an open channel of varying cross-section, viz.,

$$dz = \frac{a}{g} u\,du + \frac{f}{m} \frac{u^2}{2g} ds,$$

deduce the general expression for the slope at any point, and discuss the cases a $u^2 < gh$ and $H > h$.

DEGREE EXAMINATIONS.

HYDRAULICS (*Paper II*).

1. What are the fundamental principles which should govern the design of every water-motor?

The lip angle of a given bucket is 30°, the relative velocity (V) is one-half the velocity (v_1) with which the water reaches the lip. If there is to be no "loss on shock," find the speed (u) of the bucket, and show that if the speed changed 10 p.c., the lip angle must also be changed by 4.674 per cent.

2. With a Borda turbine, if the whole of the energy is changed into useful work, show that

$$u\, v_1 \cos(\theta + \phi) = g\, H.$$

What advantages are gained by making a Borda turbine of considerable height and diameter, and by curving the buckets at the outlet, so as to make ε small?

3. In a tangential turbine, revolving with an angular velocity A, show that the change of head per unit of mass of water due to centrifugal force is

$\frac{A}{2}(r_1^2 - r_1^2)$, between points r_1 and r_2 from the axis.

In a I.F. tangential turbine, $\gamma = 15°$; $a = 120°$; $5r_1 = 6r_2$; $Q = 1$, and head $(h) = 100$ ft. If $f_2 = f_4 = 1/9$, find the frictional loss, the useful effect, and the efficiency.

4. If r_1 and r_2 are the outer and inner radii of a water-wheel, with buckets in the form of a circular arc, and if x is the angle subtended at the axis by a bucket, show that

$$\frac{r_1 + r_2}{r_1 - r_2} = \frac{\tan\left(\frac{a}{2} - 45\right)}{\tan\frac{x}{2}}$$

a being the lip angle at inlet.

5. In an overshot wheel deduce the relation,

$$r_1\, \omega^2 \cos(\theta + \phi) = g \sin\phi$$

In a 32 feet wheel, with a 1 foot crown and a peripheral velocity of 8 feet per second, the point where spilling commences is defined by the relation $\theta = \phi$. Find the arc over which spilling takes place, the angle between the arm and circumference being 30°. Also find the "bucket" angle.

6. In the preceding question, if 11 cubic feet of water enter the wheel at 15 ins. from the summit, and with a velocity of 18 feet per second, show how to find the mechanical effect due to impulse and that due to weight.

7. Write down the formulae governing the design of an axial flow reaction turbine, and show how they are modified in the case of an impulse turbine.

In an A.F. impulse turbine of 4 ft. diar., 1 foot deep, and with a 6 in. width of opening at inlet and outlet, the efficiency (η) = .8; $\beta = 30°$; $\gamma = 30°$; $V_2 = u_2$. Determine the inlet lip angle (α), the effective fall, the delivery (Q) (disregarding thickness of vanes), the H.P. and the number of revolutions per minute.

8. Show how to determine the efficiency of a radial flow reaction turbine, the inlet lips being radial and the whirling velocity at outlet nil.

If $d_2 = 2d_1$ and $\gamma = \tan^{-1} 4$, show that the reciprocal of the efficiency is $^1/_1 + \tan \beta$.

9. Point out the essential difference between turbines and centrifugal pumps. What advantage is gained by adding a whirlpool chamber? Deduce the relation

$$2g\ H_a = u_2^2 - V_2^2$$

The reciprocal of the efficiency of a C.P. is 1.61, the peripheral (u_2) and radial (v_r'') velocities at outlet are 35 and 9 feet per second respectively. Find the lift and the vane angle (β) at outlet.

10. Discuss the formation of a free circular vortex, a free spiral vortex and a forced vortex.

DEGREE EXAMINATIONS.

HYDRAULIC LABORATORY WORK.

THURSDAY, MARCH 30TH.

Examiners,..... { HENRY T. BOVEY, LL.D., M.INST. C.E.
E. G. COKER, B.SC., A.M.INST. C.E.

1. Show how you would proceed to determine simultaneously the coefficients of discharge for an orifice and a weir. Illustrate your answer by sketches of the arrangement and note any points of importance.

In a simultaneous test of a 1 inch orifice and a rectangular weir of breadth 5.981 inches, the following data were obtained:

Discharge,	637.27 gallons.
Time,	18 mins., 50 seconds.
Head over orifice,	12 feet.

Time min.	Vernier Readings. I.	II.	III.
	Zero readings.		
	14.789	15.128	14.938
0	13.018	13.357	13.169
2	13.018	13.359	13.169
4	13.018	13.361	13.169
6	13.019	13.363	13.167
8	13.019	13.363	13.170
10	13.019	13·365	13.171
12	13.020	13.365	13.171
14	13.020	13.364	13.171
16	13.022	13.364	13.171
18	13.022	13.364	13.167

Determine the coefficients of discharge.

2. Describe by aid of sketches the impact measuring apparatus used in the laboratory, and point out what precautions are necessary to ensure an accurate result.

In an impact experiment with a bucket of parabolic section, the following data were obtained :

Bucket.—Horizontal distance from orifice 48 inches.
Vertical distance below orifice, 2.582 inches.
Inclination of axis to horizontal, 6° 8′
Angle of bucket 27°.

Orifice.—Diameter $\frac{1}{2}$ inch ; head 20 feet ;
Coefficient of discharge, .6013 ;
" of velocity, .964.

Balancing weight in pan, 3.535 lbs.
Ratio of arms of impact balance $\frac{2}{3}$.

Determine the coefficient of impact and also the force of impact.

3. Describe the Pelton wheel in the hydraulic laboratory, and show by sketches and a short description how you would proceed to make an efficiency test of the wheel.

Determine the efficiency of the Pelton wheel from the following experimental data : Time, 7 mins., 13.4 seconds ; total revolutions, 4,886 ; discharge, 1,022 gallons ; mean head of water, 229.8 feet.

Brake wheel :—Diameter, 18 inches.
Diameter of brake rope, 5/16 inch.
Mean tension, tight side, 73.7 lbs.
" " slack " 1.4 lb.

4. Give a short account of the apparatus used in the laboratory for determining the critical velocity of flow in pipes, and state the formula obtained by Reynolds as the result of his experiments.

SECOND YEAR.

SURVEYING.

SATURDAY, 8TH APRIL:—9 A.M. TO 1 P.M.

Examiners..... { C. H. MCLEOD, MA.E.
J. G. G. KERRY, MA.E.

1. Two railroad tangents intersect at an angle of 33° 24′. It is required to connect them with a curve passing through a point 84.1 ft. away from the point of intersection in a direction toward the centre of the curve. Calculate the degree of curve and the apex distances.

Calling the B.C. of the above curve 85 + 24 and the tangent bearing 110° 08′, write out a full set of notes for running the curve by the traverse method, the hubs being at the B. C., E.C. and the given point.

2. Construct a paper slide rule, laying out the graduations for 1.0, 1.5, 2.0, 2.5,....9.5, 10.0, and with it calculate $\frac{650 \times 5 \times 0.004}{95 \times 0.25}$ explaining fully the rule of integers by which you determine the position of the decimal point in the result.

3. In a Rochon micrometer, assuming a length A for the target rod, deduce a formula for expressing the distance from the object glass to the rod.

What is the limit of error that the Dominion Lands Department sets for micrometer traverses?

In a special instrument with a rod 6 ft. in length the following observations were made:

Distance of rod.	Reading.
700 ft.	30.90
750	29.01
800	27.50

The principal focal length of the object lens being 1.25, calculate the instrumental constant.

4. Describe clearly three methods of connecting an underground with an overground survey through a vertical shaft.

5. Describe clearly the adjustment of the dumpy level, explaining why each motion is made and illustrating by an example.

6. The height of a B. M. is 204.96, the B. S. is 6.19 and the height of grade at the station is 186.0. The elevation of the ground on the

centre line being 193.5 and the ground sloping 1 in 20 downward to the left, write out a set of notes showing the slope staking for a cut 20 ft. wide with side slopes of $\frac{3}{4}$ to 1.

7. The following survey was run in a mine:

Line.	Bearing.	Inclination.	Length.
I—II	232° 58′	— 52° 52′	95.14
II—III	319° 57′	+ 6° 02′	101.93
III—IV	329° 51′	+ 25° 36′	30.29

Calculate the length, bearing and inclination of the line I-IV.

8. Mention the variations to which the compass needle is subject. How can you detect local attraction while making a survey? Correct the following notes for local attraction, assuming the pointing of the needle at Sta. 1 to be correct.

Sta.	Back Bearing.	Front Bearing.	Distance.
I	S. 38 15 E	N. 69 15 E	514
II	S. 67 W	S. 45 45 E	192
III	N. 42 W	N. 82 15 E	87
IV	S. 80 30 W	S. 1 45 E	87
V	N. 3 00 W	S. 89 30 W	785
VI	N. 89 45 E	N. 39 30 W	437

9. A line is being run out by picket and chain and crosses a river. Show by sketch and description how you would ascertain its width, describing each step in detail, giving the relative magnitude of the lines, and pointing out all precautions necessary to secure accurate work and a satisfactory result.

THIRD YEAR.

SURVEYING.

MONDAY, APRIL 10TH:—2 TO 5.30 P.M.

Examiners,.... .... { C. H. MCLEOD, MA.E. / J. G. G. KERRY, MA.E.

1. Examine the adjustments of the transit, and state what movements are necessary to bring it into adjustment. Measure the angular error of adjustment of the cross hairs and of the horizontal axis.

2. Determine the value of one division of the bubble of the dumpy level, and calculate what would be the error in a reading on a rod distant 387 ft. if the bubble were one division out of centre.

Determine the error of adjustment of the instrument, and calculate its effect in a reading upon the same rod.

3. In running a 1° 30′ curve, a house is found on the line in such a position that it can only be passed by turning in from the tangent at the hub 4° 19′ and putting in a hub 97 ft. away. Calculate the angle that must be turned at this hub and the distance that must be measured in order to strike the curve at a point 150 ft. along the curve from the first hub. Calculate also the angle that must be turned at the new hub on curve in order to get on to tangent.

4. Examine the adjustments of the sextant, state whether they are correct and measure the error when possible.

5. In a survey at Isaac's Harbour, the soundings were fixed by a range, one bearing, and one sextant angle. The plan of the shore points is drawn upon the board. Plot the points given by the following notes :

	Sextant Points.	Sextant Angle.	Transit Bearing.
1.	B and C	76° 33′	309° 24′
2.	A and C	91° 55′	311° 26′
3.	A and C	74° 27′	313° 54′

Placing no reliance upon the range, when would this method of fixing points be unsatisfactory ?

6. The notes of two of the cross-sections at St. Andrews were as follows :

54 + 50	$\frac{2.0}{14.0}$	4.4	$\frac{7.1}{21.6}$
55	$\frac{1.8}{13.7}$	4.4	$\frac{7.0}{21.5}$

Calculate the solid between them by the end area and the prismoidal methods, showing all the figures of your calculation upon your paper.

Deduce a formula to express in terms of centre cuts and distances between slope stakes the difference between the end-area solidity and the prismoidal solidity between any two cross sections.

How would you arrange to avoid errors in your quantities arising from the use of the end area method of reduction.

7. In running a mine survey with the B. and B. transit, it becomes necessary to use the side telescope to sight from Sta. B. to Sta. C., 187 ft. away horizontally. The back sight from Sta. C. to Sta. B. is also taken with the side telescope, the survey being run by the traverse method. The main telescope is used for the remainder of the survey.

What is the amount of the angular error to be corrected for an account of the use of the side telescope?

8. Explain fully and with exact detail how you would proceed to determine the slope of a large river over a considerable length of its course.

THIRD YEAR.

PRACTICAL ASTRONOMY.

MONDAY, APRIL 10TH :—9 A.M. TO 12.30 A.M.

Examiners, ... { C. H. McLEOD, MA.E. / J. G. G. KERRY, MA.E.

1. What determines the length of a tropical year? What is its length in days? Define a mean solar day and a sidereal day, and state the relation between them.

2. Find the mean time corresponding to $10^h\ 12^m\ 13^s$ sidereal time at Montreal on April 1st, 1899, and find the sidereal time of the same instant at a point situated $9^h\ 30^m$ in longitude east of Montreal.

3. What is the horizontal parallax of a celestial body, and express by a formula the change in the correction for parallax due to change in the altitude of the body.

4. Calculate the time of rising of Aldebaran (p. 374 N.A.) at Montreal on July 10th, 1899.

5. Obtain a formula for the reduction of observations for latitude by the zenith telescope method.

6. Equal altitudes of the sun were observed on March 1st, 1899, at Montreal at the following times on a mean time watch $9^h\ 10^m\ 13^s$ a.m. and $2^h\ 50^m\ 15^s$ p.m. Find the error of the watch in local mean time.

7. The sun was observed at Montreal on the morning of March 1st, 1899, at an altitude of 15°. Calculate the azimuth.

8. Two stars in declinations N 76° 58′ and N 9° 32′ were observed at Montreal to pass the mean wire of a meridian transit at $9^h\ 54^m\ 31.02^s$ and $10^h\ 02^m\ 57.34^s$ respectively; the right ascensions of the stars were $9^h\ 54^m\ 02.33^s$ and $10^h\ 02^m\ 34.46^s$ respectively. The inclination of the axis 0.20^s, east end high; collimation is zero; calculate the azimuth of the transit and the clock error.

B.Sc. EXAMINATION.

PRACTICAL ASTRONOMY (*Paper I*).

Examiner,..... C. H. McLEOD, MA.E.

1. Show that $a = T + \Delta T + m + n \tan \delta + c \sec \delta$
where $m = b \cos \phi + a \sin \phi$, and
$n = b \sin \phi - a \cos \phi$.

2. Explain fully one method of measuring the value of a revolution of a micrometer screw.

3. Obtain the necessary formulae and show how to measure the eccentricity of a graduated circle with two microscopes or verniers.

4. Show that the inclination of the index mirror of a sextant to the horizontal is a constant when measuring the altitude of any star by reflection from mercury.

5. Show how to measure the inclination of the horizontal axis of a transit instrument by reflection from mercury.

6. Name four methods of measuring collimation error in a transit instrument and describe two of them.

B. Sc. EXAMINATION.

GEODESY.

FRIDAY, MARH 7th, 9 to 12 a.m,

Examiners,..... { C. H. McLEOD, MA.E.
J. G. G. KERRY, MA.E.

1. Obtain a formula for the convergence of meridians (*a*). Calculate the convergence angle of meridians one degree apart, in longitude, at the latitude N. 60°.

2. Point out concisely the precautions to be adopted in an observation in the prime vertical, for latitude, in order to eliminate instrumental errors. Show how Azimuth error is measured, and obtain a formula by which the effect of azimuth on the resulting latitude is eliminated.

3. Show how to adjust the angles of a quadrilateral, and obtain the formulae necessary for the complete adjustment from the side equations.

4. What are the corrections to be applied to the measured length of a base line, by steel tape. (*a*) Obtain the formula for the correction for sag.

5. Give a brief account of the method now employed in determining the figure of the earth.

6. Given the following meridian transit observation, calculate, a, e and clock error, by an approximate method.

Explain the reduction by the least square method as follows: Write the equations of condition; show how to obtain the coefficients for the normal equations; and assuming these coefficients give the normal equations.

	LAMP EAST.			LAMP WEST.		
A	0.07	2.33	0.90	0.96	0.48	0.64
B	1.35	3 80	0.51	2.40	0.94	0.78
C	1.36	4.47	1.04	2.59	1.05	1.01
a	h. m. s. 23 33 11.92	h. m. s 23 35 13.73	h. m. s. 23 37 30.20	h. m. s. 23 43 06.02	h. m. s. 23 47 21.99	23 54 08.58
T	23 33 25.58	23 35 20 75	23 37 46.38	23 43 15.92	23 47 36.42	23 54 23.64
$b = -0.21$.						

FIRST YEAR.

DESCRIPTIVE GEOMETRY.

MONDAY, APRIL 3RD :—9 TO 12 A.M.

Examiners, ... { C. H. MCLEOD, MA.E. / H. F. ARMSTRONG.

1. A square prism $3\frac{1}{2}''$ long and $2''$ edge of end stands vertically on the H.P., so that a diagonal of the end makes an angle of 20° with X Y. A right circular cylinder $2\frac{1}{4}''$ diameter of end° axis $4\frac{1}{2}''$ long, penetrates the prism so that the axes bisect each other at right angles, and the plan of the axis of the cylinder coincides with the diagonal of the end of the prism at 20° to the X Y line. Find the plan and elevation, marking clearly the line of interpenetration.

2. A right pentagonal prism, length $3\frac{1}{2}''$, edge of end $1\frac{1}{2}''$, rests on one of its long edges on the H.P. The lowest rectangular face is inclined at 10° to the H.P., and the axis is parallel to the V. P. Find the elevation of a section caused by a vertical plane at 35° to the V.P. and passing through the middle point of the axis. (*a*) Show the development of the surface of the prism, marking on it the line of section.

3. The triangle $A\ B\ C$ has the point A $1\frac{1}{4}''$ above the H. P.; the point B $\frac{7}{8}''$ above the H. P.; and the point C $\frac{1}{4}''$ above the H. P. The lengths of the sides, in plan, are $AB = 1\frac{1}{2}''$, $AC = 1''$ and $BC = 1\frac{3}{4}''$. Find the true form of the triangle by rabbatment about the horizontal trace of the plane containing the triangle.

4. The circumference of a circle of 3″ diameter rests on the H. P. and the plane of the circle is inclined to the H.P. at an angle of 60°. The horizontal diameter is at 40° to the V. P. Find the plan and elevation of the circle.

5. A cube of 2″ edge rests on the H. P. on one of its edges, and an adjacent edge makes angles of 30° with the V. P. and 50° with the H.P. Find plan and elevation and also a second elevation on a plane at 30° to the edge which lies in the H. P.

6. A right circular cone, a section through the axis of which is an equilateral triangle of 3″ side, is penetrated by a sphere of 2″.5 diameter. The centre of the sphere bisects a generator line of the cone. Find an elevation and plan of the line of penetration.

7. Find the altitude of a regular tetrahedron of 2″ edge.

SECOND YEAR.

DESCRIPTIVE GEOMETRY.

MONDAY, APRIL 3RD:—9 TO 12 A. M.

Examiners .. .. { C. H. McLEOD, Ma.E. / H. F. ARMSTRONG.

1. One diagonal of an octahedron of $1\frac{1}{2}$ inch edge is inclined at 35° and an adjacent edge is inclined at 50° to the horizontal. Let the given diagonal be in the V. P. Show the plan of the solid and also an elevation on a plane not parallel to the given diagonal, or to any edge of the solid.

2. The axis of a right circular cylinder of $1\frac{1}{2}$ in. diameter is inclined to the H. P. at 50° and is parallel to the V. P. Find the traces of two planes touching the cylinder and inclined at 65° to the H. P.

3. LN, MN are the horizontal traces of two planes and LO, MO their vertical traces; $LN = 2.0$, $MN = 1.5$, $LO. = 1.5$, $MO = 2.0$ and $LM = 2.0$. Find the traces of the two planes which bisect the angles between the given planes and also the traces of a third plane bisecting ON and being perpendicular to it.

4. A cone has a circular base of 3 in. diameter in the H. P. The centre of the base is 2 in. from the XY line and the plan of the axis of the cone which is inclined at 45° to the XY line is one inch long. The apex of the cone is 3 in. above the H. P. A cylinder of 2 in. diameter has the plan of its axis parallel to the V. P. and $1\frac{3}{4}$ in. from it. The cylinder rests on the H. P. Find the plan and elevation of the penetration lines.

5. A circular cylinder 1 inch high and $2\frac{1}{2}$ in. diameter touches the V. P. and its base is 1 inch above the H. P. Find the shadow lines caused by the object as they fall partly on the V. P. and partly on the H. P. The elevations of rays are at 50° and the plans at 30° to the XY line.

6. Find the axometric projection of a right cone, the axis of which measures 3 in. and the diameter of the base 2.5 in. The angles between the axes of projection are 120° and 135°.

7. A right circular cone, a section through the axis of which is an equilateral triangle of 3 in. side, is penetrated by a sphere of 2.5 in. diameter. The centre of the sphere bisects a generator line of the cone. Find an elevation and plan of the penetration line.

THIRD YEAR.

PERSPECTIVE AND MAP PROJECTIONS.

THURSDAY, APRIL 6TH :—9 A.M. TO 1 P.M.

Examiners, ... { C. H. MCLEOD, MA.E. / J. G. G. KERRY, MA.E.

1. Prove graphically that the perspectives of any number of parallel lines meet in one point, and demonstrate by an example the truth of the measuring point method.

2. Mention the errors that are present in maps made by (1) Conic, (2) Bonne, (3) Polyconic Projections, and explain what lines you would examine to ascertain which of the methods had been used.

3. State by what projections the maps given you are drawn and why they are particularly suited to the maps.

4. There are two points A and B with elevations of 30° and 60° respectively, and which subtend a horizontal angle of 25° at C. What angle do they subtend at C if the angle is measured in the plane ABC.

5. The elevation of a trestle bent is sketched on the board. With eye 7 feet above ground and 25 feet away, draw the perspective of the bent when

the front corner of the sill is in the picture plane 17 feet to the left, and the plane of the bent makes an angle of 30° with the picture plane.

6. The projections of the sun's rays make angles of 30° and 60° with the ground line. Draw the perspective of the shadow of the bent.

7. The diagram on the board is a plan showing three camera stations and three points, their elevations being noted. Draw outline negatives showing where these points would appear in the photos taken at each station. Choose the direction of the centre line of view to suit yourself.

FOURTH YEAR.

ALTERNATING CURRENT MACHINERY.

WEDNESDAY, APRIL 5TH.

Examiners, ... { R. B. OWENS, E.E.
L. A. HERDT, MA.E., E.E.

1. Give the following data of an alternator:

Number of poles 20, mean length of magnetic circuit in armature 15 cm., in air-gap .95 cm., in pole 26.3 cm., in yoke 20 cm., cross section of armature 930 sq. cm., air-gap 1200 sq. cm., pole 1070 sq. cm., yoke 2250 sq. cm., magnetic permeability of iron in armature 2500, in pole 2300, in yoke 280; 616 windings on pole of .106 sq. cm. cross section and 160 cm. mean length; resistivity of copper 1.8×10^{-6} and the field windings all connected in series.

How long after applying a constant electromotive force of 230 volts will it take for field to reach one half its full strength?

With full field strength what is the energy in joules stored in the magnetic field?

2. Find effective value of a sinusoidal e.m.f. in terms of maximum value.

Find expression for power absorbed in an inductive circuit in terms of effective electromotive force and current and angle of lag between them; e.m.f. supposed sinusoidal.

3. When the sinusoidal e.m.f. is applied to a circuit having resistance, inductance and capacity in series, find expression for current in terms of applied electromotive force, constants of circuit and angle of lag.

4. Given two mutually inductive circuits in air; construct vector diagram showing phase relation of e.m.fs. and current when sinusoidal e.m.f. is applied to one.

5. Show that two alternators will operate in parallel, but not in series. What tests would you make on an alternator to establish its commercial value? On a transformer? Induction motor? Describe method of making each test.

If the armature of a large alternator is short circuited through an ammeter and a certain armature current established by exciting the fields; on throwing off belt ammeter reading is seen to remain practically constant until armature has come nearly to rest. Explain.

THIRD YEAR.

DIRECT CURRENT DYNAMO MACHINERY.

TUESDAY, APRIL 4TH.

Examiners,.. ..... { R. B. OWENS, E.E. / L. A. HERDT, MA.E., E.E.

1. Derive principal formulæ used in predetermining leakage co-efficients of dynamos, and show how to apply them to a machine of the Edison-Hopkinson type. Give experimental method of determining leakage co-efficients

2. How are the number of series turns on a Direct Current dynamo, to produce a given amount of compounding, predetermined?

3. How may cross magnetizing turns be compensated for? Discuss the conditions of sparkless commutation with variable load and fixed brush position.

4. State how you would test a continuous current motor for capacity, efficiency and regulation. How would you separate the eddy and hysteresis losses in armature?

FOURTH YEAR.

DIRECT CURRENT DYNAMO MACHINERY.

MONDAY, JAN. 16TH.

Examiners,..... ..... { R. B. OWENS, E.E. / L. A. HERDT, MA.E., E.E.

1. How are the ampere turns on a given magnetic circuit, to produce a given flux, predetermined?

2. Discuss the subject of armature reactions.

What rules would you observe in designing a continuous current dynamo for fixed brush position and sparkless commutation ?

3. What tests would you make on a continuous current dynamo to establish its value as a commercial machine ?

Describe method of making each test.

4. How would you separate eddy and hysteresis losses in the armature of a dynamo ?

THIRD YEAR.

ELECTRO-MAGNETISM.

THURSDAY, MARCH 2ND.

Examiners, ... { R. B. OWENS, E.E.
L. A. HERDT, MA.E., E.E.

1. What is meant by a magnetic field ?

How is it represented in intensity and direction ?

Define magnetizing force, magnetic induction. Discuss the relation between the two in iron.

2. Give balistic and traction methods of measuring magnetic quality.

Discuss effect of chemical composition, mechanical stress and temperature on the magnetic qualities of iron.

3. Derive Hopkinson's formula for the magnetic circuit, and discuss its analogy to Ohm's law.

4. Give Faraday's law for the generation of electro-motive force. What work is done in ergs in moving a magnetic circuit carrying a current in a magnetic field.

FOURTH YEAR.

ELECTRIC LIGHTING.

Examiners, ... { R. B. OWENS, E.E.
L. A. HERDT, MA.E., E.E.

Each student is required to draw up specification, estimate the cost and give a complete design of an Electric Light and Power Plant, with the distribution system, showing the different circuits, emplacement, pole lines, etc.

Each principal element of the Power House, electrical, hydraulic or steam, to be designed and discussed in detail.

Plans and drawings of the territory to be covered are given.

FOURTH YEAR.

ELECTRIC RAILWAYS.

FRIDAY, APRIL 7TH:—MORNING, 9 TO 12.

Examiners,.....{R. B. OWENS, E.E.
L. A. HERDT, MA.E., E.E.

1. What troubles arise from imperfect return circuits in overhead single trolley systems?

Discuss best current methods of improving return circuit.

2. Given weight of train, coefficient of traction and grade: required size of motor to produce a given speed in a given time.

3. Discuss the design and installation of overhead circuits for electric railways.

4. What considerations should guide in the selection and design of machinery and appliances for a street railway power plant? Discuss each principal element in some detail.

B.Sc. EXAMINATIONS.

MECHANICAL ENGINEERING LABORATORY WORK.

MONDAY, APRIL 10TH:—MORNING, 9 TO 1.

Examiners,.....{JOHN T. NICOLSON, D.SC.
R. J. DURLEY, MA.E., A.M.INST.C.E.
HOMER M. JAQUAYS, B.A., B.SC.

1. Describe the various methods of determining the amount of air used by the furnace in a boiler trial, and point out the sources of error to which they are respectively liable. Why is the air measurement of importance? (30)

2. Two trials were made on a certain boiler with the same coal under the same conditions, and at the same rate of evaporation. The first gave an equivalent evaporation (from and at 212°) of 8.8 lbs. of water per lb. of coal, the steam being dry. During the second trial 5,290 lbs. of water were pumped into the boiler per hour, and 615 lbs. of coal were fired per hour, the average absolute steam pressure being 131 lbs. per sq. inch, and the feed temperature 124° F. What percentage of moisture in the steam would account for the above result?

Temp. corresponding to 131 lbs. abs. = 347.7° F.
Latent heat of steam at " " = 869 (30)

3. In a calorimetric test of a certain sample of coal the following numbers were obtained:—

Weight of water in calorimeter,	7.5 lbs.
Water equivalent of calorimeter, jar and thermometer used	0.6 "
Temperature at beginning of ignition,	25.92 ° C.
" end "	26·77 "
Time taken to burn sample,	12.5 minutes.
Mean radiation loss,	0.033 ° C per min.
Original weight of crucible and dry coal,	8.984 grammes.
Weight of crucible, ash, and unburnt coal after burning,	8.381 "
Weight of crucible and unburnt coal,	8.164 "

1 gramme = 0.0022046 lbs.

Find the calorific value of the sample in B.T.U. per lb. (40)

4. In a trial of an Atkinson Cycle Gas Engine the volume of gas by meter was 0.01675 cu. ft. per ignition, measured at 79 ° F. and 14.8 lb. per square inch (absolute). During the suction stroke the piston swept through 0.135 cu. ft., and at the end of that stroke the temperature of the mixture of gas and air was 110 ° F, the pressure being 14 lbs. per sq. inch. Find the proportions of gas and air used by volume and by weight, having given that

1 cu. ft. of air at 32 ° F. and 14.7 lb. per square inch, 0.0807 lbs.
1 cu. ft. of gas " " " " 0.0378 " (40)

5. What is a "light spring" indicator diagram from a gas engine, and for what purposes are such diagrams taken? Sketch the form of a light spring diagram from

(*a*) an Atkinson Cycle Engine,

(*b*) an Otto Engine,

discussing the essential differences between them. (40)

6. Sketch an indicator diagram of a high speed automatic-cut-off engine in full lines. Indicate upon this by a dotted line, (1) the card you would get with a long or stretchy string, (2) what you would get with lost motion between spring and indicator piston. (50)

7. Describe, with sketches of the apparatus employed, the method of carrying out any two of the following experiments:—

(*a*) The calibration of an indicator spring.

(*b*) The stretching of indicator cords and the proper tension of the barrel spring.

(*c*) The calibration of a transmission dynamometer.

(*d*) The friction of a lubricated journal.

(*e*) The leakage of a slide valve.

(*f*) The rate of condensation of steam on a metal surface

(*g*) The study of the flow of air by means of a Pitot's tube.

(*h*) The cutting force of machine tools.

THIRD YEAR.

MACHINE DESIGN.

TUESDAY, APRIL 11TH :—MORNING, 9 TO 12.

Examiners,..... } JOHN T. NICOLSON, D.Sc.
HOMER M. JAQUAYS, B.A., B.Sc.

(*Not more than eight questions to be attempted.*)

1. A steel tie rod 1″ diameter sustains a load of 10,000 lbs. Find the stress and strain on it.

2. Steel rails for street tramways expand one thousandth of their length more than the road in which they are embedded for every 180°F. of increase of temperature. Their ends are welded together in winter when the temperature is 32°F. What compressive stress are they subjected to in summer when their temperature is 112°F. ?
E = 30,000,000 lbs. per sq. in.

3. Calculate the sizes of, and sketch with dimensions, a flange coupling for a $2\frac{1}{2}$″ dia. steel shaft.

4. Deduce the formula for the moment of resistance of a beam of rectangular section to bending.

5. Deduce the formula for the moment of resistance to torsion of a circular shaft.

6. Deduce the formulae for the strength of a double riveted lap joint.

7. What governs the amount of resistance to slipping of the plates, relatively to each other, of a riveted joint.

8. Find the thickness of plate for a locomotive boiler 4′ 6″ dia., with double riveted lap joints to stand 180 lbs. pressure.

9. Find the proper size of a crane handle to sustain the pull of two men ; and sketch it with dimensions.

10. Deduce from first principles the formula for the twisting moment equivalent to a given wrenching action.

B.Sc. EXAMINATIONS.

MACHINE DESIGN, I.

TUESDAY, APRIL 18TH:—MORNING, 9 TO 12.

Examiners, ... | JOHN T. NICOLSON, D.Sc.
R. J. DURLEY, MA.S., A.M.Inst. C.I.

(Only *six* questions may be attempted. Show all calculations in full. Sketches should be employed wherever necessary. Slide rules may be used. Figures give proportional marks.)

1. A Locomotive Boiler has a barrel 62″ mean diameter. The longitudinal seams are double riveted and have double butt straps. Find the least percentage strength of joint, and the proper working pressure, having given:—

Thickness of plate,	$\frac{9}{16}$″
Diameter of rivets,	$\frac{3}{4}$″
Pitch of "	$3\frac{1}{2}$″
Thickness of straps,	$\frac{3}{8}$″

The rivets and plates are mild steel, and the working stress to be allowed is 12,000 lbs. per square inch in tension, and 9,600 in shear. (25

2. In a bicycle find the diameters of the pedal pin close to the crank, of the crank arm (circular section) close to the axle, and of the axle at the ball race. All are of hard steel, for which a working stress of 20,000 lbs per square inch may be allowed.

Length of crank, $6\frac{1}{2}$″.

Distance centre of pedal to centre line of crank arm, $2\frac{1}{4}$″

Distance centre of pedal to centre of ball race, 3″. (25

3. In comparing the durability of two pairs of toothed wheels, show that on certain assumptions the life of the gearing will be proportional to the value of

$$\frac{b}{v\,P\left(\frac{1}{r_1}+\frac{1}{r_2}\right)}$$

where b = breadth of face

v = velocity of pitch line

P = pressure between teeth at pitch line

r_1 r_2 = radii of pitch circles. (25

4. State what you know of the results of experiments on the efficiency of worm gearing. Under what conditions has such gearing its highest efficiency? (20

5. A steel wire rope $\frac{3}{4}''$ diameter, weighing 0.815 lbs. per foot, running 100 feet per second, transmits 160 H.P. with a total tension on the lower or tight side at the pulley of 1800 lbs. The pulleys are 15 feet diameter and 400 feet apart, their centres being at the same level. Find approximately the least height from the ground to centre of pulley if the tight side of the rope is to clear the level ground. Also find the tension on the slack side of the rope. (25)

6. Show that for a helical spring of round steel wire

$$\text{deflection in inches} = \frac{64\ PR^3\ n}{G\ d^4}$$

where P = load in pounds
R = mean radius of coil in inches
n = number of free coils
G = modulus of rigidity (lbs. and inches)
d diameter of wire of spring in inches. (20)

7. Investigate an expression for the maximum stress due to inertia in a locomotive coupling rod, supposed uniform and of rectangular cross section. Find this maximum stress in a rod 7′ — 9″ centres, section $4\frac{3}{4}'' \times 1\frac{3}{8}''$, revolutions per minute 200, throw of crank 12″. The material of the rod weighs 0.3 lbs. per cubic inch. (30)

8. The slide valve of a small engine has 2″ travel, 7-16″ lap, and 3-16″ lead. Draw a Zeuner valve diagram; determine the angular advance of the eccentric, and mark the crank positions corresponding to admission, cut off, release, and compression. Scale: twice full size. (20)

9. Sketch a double beat valve. A steam cylinder fitted with Proell gear has double heat steam and exhaust valves. The cylinder is 20 inches diameter and 30 inches stroke, the revolutions being 75 per minute. Allowing a speed of 6,000 feet per minute for the exhaust steam, mark on your sketch suitable dimensions for the exhaust valves of this cylinder, the lift being $\frac{3}{4}$ inch. (25)

B. Sc. EXAMINATIONS.

MACHINE DESIGN. II.

THURSDAY, APRIL 13TH :—MORNING, 9 TO 2.

Examiners, ... { JOHN T. NICOLSON, D.Sc.
R. J. DURLEY, MA.E., A.M. INST. C.E.

(Instructions. All necessary calculations are to be made in full on the foolscap paper provided, and must be handed in with the draw-

ings, which are to be in pencil and dimensioned. Mathematical tables, slide rules, note books, and books of reference may be used. Ten per cent. marks will be given for neatness and accuracy of drawing.)

Design the cylinder, ram, and gland of a simple hydraulic press from the following data:—

Total force exerted by ram.....	100,000 lbs.
Working pressure.....	5,000 lbs. per sq. inch
Stroke of ram.....	2′ 6″
Probable efficiency of press.....	0.85
Diameter of inlet pipe.....	$\frac{7}{8}$″ inside.
Internal diameter of ram.....	3″

The foundation and ram table are of cast iron; they need only be drawn so far as is necessary to show how the ram is connected to the table and the cylinder to the foundation. The foundation is 10 inches deep, and the head of the ram fits into a socket 9 inches deep in the ram table. The ram is to be cased with gun metal $\frac{1}{4}$″ thick; it is of cast iron, and its stuffing box is to be packed with $\frac{3}{4}$″ hemp gasket. Depth of recess for packing 3″. The cylinder is of cast steel. The inlet pipe is of wrought steel hydraulic tube.

Find (1) External diameter of ram.
(2) Internal and external diameters of cylinder.
(3) Thickness and size of cylinder flange.
(4) Particulars of gland and stuffing box.
(5) Stress in ram due to fluid pressure.

The drawings are to be to a scale of three inches to the foot, and include a longitudinal section and a plan of the cylinder and ram complete. A diagram showing the distribution of the hoop stress in the metal of the cylinder and ram, and a full size detail of the joint between the inlet pipe and the cylinder should also be drawn.

B.Sc. EXAMINATIONS.

MACHINE DESIGN.

(Electrical Engineering Students only.)

TUESDAY, DECEMBER 20TH:—MORNING, 9 TO 12.

Examiner,.....R. J. DURLEY, MA.E., ASSOC. M.INST.C.E.

(Sketches should be freehand, clear, and in fair proportion, but need not be to scale. Figures after the questions give the proportional marks assigned to each. Any nine questions may be attempted.)

1. Make a dimensioned sketch of a knuckle-joint connecting two wrought iron bars $1\frac{1}{2}''$ in diam.

Take $f_t : f_s : f_c :: 1 : \frac{3}{4} : 2$. (20)

2. Explain how to design a pair of bevel wheels so as to give a required velocity ratio, and show how the profile of the tooth is drawn out and set off on the wheel pattern. (15)

3. The longitudinal seams in a locomotive boiler barrel (4′—3″ mean diam.) are double zig zag rivetted with double butt straps, and have the following dimensions:—

Thickness of plates,	$\frac{9}{16}''$
" butt straps,	$\frac{3}{8}''$
Diam. of rivets,	$\frac{3}{4}''$
Pitch of rivets,	$3\frac{1}{2}''$
Width of butt straps,	$8\frac{1}{4}''$
Centre of strap to centre of first row of rivets,	$1\frac{1}{4}''$
" " " second row of rivets,	$2\frac{7}{8}''$

Find the working pressure on the boiler, if the maximum allowable stress on the material is 12,000 lbs. per sq. inch in tension and 10,000 lbs. per sq. inch in shear. (25)

4. Give some account of the considerations governing the design and safety of belt pulleys or flywheels having a high speed of rim. Having given that 1 cubic inch of cast iron weighs 0.26 lb., find the limiting speed of a pulley rim so that the tensile stress may not exceed 2,000 lbs. per sq. inch. (20)

5. A dynamo absorbing 140 H.P. at 400 revs. per minute is driven by manilla ropes, each 1″ diam. Find the number of ropes, and the initial tension, supposing the ropes embrace an angle of 163° on the pulley. Take $\mu = 0.5$, $\varepsilon = 2.718$, and maximum working load = 260 lbs. per sq. inch of gross section of rope. Speed of rope is 4,000 feet per minute. (25)

6. Find an expression for the efficiency of a worm and worm-wheel. What values have been obtained experimentally for this quantity? How does the efficiency vary with regard to speed and tooth-pressure? (20)

7. A telephone cable weighing 1.6 lbs. per foot is suspended from three twisted galvanized iron wires each 0.128″ diam. stretched be-

tween poles 60 ft. apart. Find the sag with which the wires must be erected so that the stress due to their own weight and that of the wire does not exceed 10,000 lbs. per square inch. Wrought iron weighs 0.28 lbs. per cubic inch. State carefully any assumptions you find it necessary to make in obtaining your result. Find approximately the least tension with which such a cable and wire could be erected on a 60 ft. span. (25)

8. An electric car (total weight loaded = 18,000 lbs.) is driven by a motor geared to a spur wheel on an axle. The T.M. on the axle at starting is sufficient to give the car an acceleration of 3 miles per hour per second. The wheels are 28″ diam. Each journal carries 4,500 lbs. The axle boxes are 5′ — 10″ apart, and the rails 4′ — 10″ apart, centre to centre. Find the diameter of the axle at the centre, allowing a stress of 8,000 lbs. per sq. inch. (20)

9. The spur wheel on the axle in the last question has a pitch circle 22″ diam. and is 5½″ in width of face. Find the number of teeth, assuming that the load is applied on the pitch line, is distributed across the whole width of the tooth, and causes a maximum stress of 4,000 lbs. per sq. inch. (15)

10. Sketch and describe the construction of an axle-box for a street-car or locomotive. (20)

11. Investigate an expression for the loss in friction at the pivot bearing of a flat ended vertical shaft. Find the H.P. lost at such a bearing in the case of a shaft 4″ diam., weighing 3,000 lbs. and running at 100 revolutions per minute ($\mu = 0.06$.) (35)

THERMODYNAMICS.

THIRD YEAR.

SATURDAY, APRIL 15TH:—9 TO 12 A.M.

Examiners, ... { JOHN T. NICOLSON, D.Sc.
HOMER M. JAQUAYS, B.A., B.Sc.

(*Not more than ten questions to be answered.*)

1. Sketch and describe Newcomen's "atmospheric" engine, *or* mention the improvements made to the steam engine by James Watt.

2. State the first and second laws of Thermodynamics.

3. On what laws does the equation $PV = cT$ depend? Find c for air.

4. Given that the specific heat of dry air under constant pressure is 0.2375 (expressed in thermal units), find, in foot pounds, the specific heat of dry air under a constant volume.

5. Define isothermal expansion, adiabatic expansion, duty, a perfect gas, total heat of steam, wet steam, superheated steam.

6. Five cubic feet of dry air at a temperature of 32° F. and under a constant pressure of 20 lbs. per sq. inch are heated to 110° F. Find: (1) The work done. (2) The heat taken in. (3) The change in internal energy.

7. Obtain an expression connecting the initial and final volumes with the initial and final temperatures of a gas expanding adiabatically.

One pound of dry air at 60° F. is contained in a cylinder and is compressed adiabatically to one half its original volume. Find: (1) The final temperature. (2) The final pressure. (3) The work done on the gas.

8. Three pounds of dry air at a temperature of 100° F., and under a pressure of 100 lbs. per square inch, expand isothermally to a pressure of 20 lbs. per square inch. Find the final volume and the work done.

9. Distinguish between the internal energy (I) and the latent heat (L) of dry saturated steam at any pressure P.

10. Describe, with a sketch, Carnot's cycle with water and steam or working substance. Find the efficiency of this cycle.

11. Find the work done per pound of steam by an engine which cuts off at $\frac{1}{4}$ stroke. Initial pressure 100 lbs. abs. Expansion proceeds according to the hyperbolic law (PV = const). Back pressure 16 lbs. abs. There is no compression.

12. Find the horse power of a Blake steam pump which carries steam to the end of the stroke. Steam and back pressure 115 lbs. and 16 lbs. abs. respectively. The cylinder is 8 inch dia., 12 inch stroke, and the strokes are 40 per min. Find also the absolute efficiency of the cycle.

FOURTH YEAR.

THERMODYNAMICS.

SATURDAY, APRIL 15TH:—MORNING, 9 TO 1.

Examiner, ...JOHN T. NICOLSON, D.Sc.

(*Not more than twelve in all.*)

(Mechanical Students may not attempt Nos. 6, 7, 8, 12 or 13; and must attempt not less than four of the last eight questions.)

1. Prove that $K_v = K_p - c$.

2. Show that the equation to the curve of adiabatic expansion of a perfect gas is PV^γ = constant.

3. Find the ratio of the final (τ_2) to the initial temperature (τ_1) when air is compressed adiabatically from pressure P_1 to pressure P_2.

Air at 60° F is compressed from a pressure of 14.7 lbs. to 100 lbs. absolute per square inch. The equation to the compression curve being $PV^{1.2}$ = constant; find the final temperature.

4. What are the three conditions of reversibility in a heat engine?

5. Describe the cycle of a Stirling's regenerative air-engine; and deduce the efficiency.

Sketch any form of the engine with explanations.

6. Make a tabular statement of the various quantities of heat usually distinguished in the heating and evaporating of water. Give an approximate formula for each.

7. The volume of one pound of dry saturated steam at 230 lbs. pressure absolute is two cubic feet, find the volume of one pound of wet steam (dryness fraction 0.75) at the same pressure (*a*) exactly, (*b*) approximately.

8. In a Peabody calorimeter the pressures by the steam pipe and calorimeter gauges are 215 and 25 respectively. The calorimeter temperature is 290° F. Find the dryness fraction. Barometer 14.7 lbs. per sq. in.

9. An engine uses steam of pressure P_1, volume per pound V_1 non-expansively, and rejects it at a pressure P_2. Find the efficiency.

What is its numerical value when P_1 is 70; P_2 is 18; and V_1 is 6-11?

10. How nearly may the cycle of a steam engine be made to approach reversibility? Calculate the efficiency of such an (ideal) engine.

11. Describe the action of a Joule air engine, and deduce its efficiency.

12. Draw compound diagrams for a compound engine (*a*) the Woolf type, (*b*) the receiver type.

13. Describe the action in the cylinder of an Otto gas engine; draw an indicator diagram.

(*Mechanical Engineering and Honours students not less than four of the following.*)

I. Show that the greatest amount of work which can be done, per lb. of fluid, in an engine receiving steam of dryness q_1, at temperature τ_1, expanding adiabatically to, and discharging at τ_2, is:

$$W = h_1 - h_2 - \tau_2 \log_t \frac{\tau_1}{\tau_2} + \frac{q_1 L_1 (\tau_1 - \tau_2)}{\tau_1}$$

What change would you make in this expression if the substance after expanding adiabatically to τ_2 (as before) is cooled at constant volume to τ_3 and discharged at this temperature?

II. Find the entropy acquired when water is heated from τ_0 to τ^1, completely evaporated at τ_1, and then superheated to τ^1.

Sketch the entropy temperature diagram for this case, and state the effect on the ideal efficiency and real performance of such superheating.

III. Find the net horse-power expended in a Bell Coleman Refrigerator of a capacity of 20 tons of ice per day (of 24 hours). Pressure and temperature in cold chamber 14.7 and 32° F.

Pressures of air at entrance to an exit from cooler 44.1 and 34.1 absolute, and temperature of air when delivered into expansion cylinder 90° Fah.

Initial and final temperatures of cooling water 60° and 90° F.

IV. Prove that in a compound engine with cranks at right angles, the condition of no drop in the H.P. cylinder is secured when

$$2R(xL - 1) = 1 - 2\sqrt{x(1-x)}$$

where L = ratio of volumes of large and small cylinders
" R = " " " receiver " "
and x = fractional cut off in LP cylinder.

V. Find the theoretical maximum pressure of explosion in a gas engine ; if the initial temperature be 90° F, the specific heat of the mixture at constant volume be 0.18 ; the ratio of volumes of air to gas used be 11.

The density of the gas is 0.44 that of air.

Find also the efficiency if the cycle be that of Otto and the ratios of expansion and compression be 2.7.

VI. Show that in a complete cycle

$$\int \frac{dQ}{\tau} = 0$$

where $d\,Q$ is the element of heat taken in or rejected at temperature τ.

VII. State concisely the various explanations offered for the defect of pressure obtained in a gas engine cylinder below that theoretically possible. Discuss their validity.

VIII. Given the indicator cards and the temperatures of the clearance surfaces from a steam engine trial ; explain how you would calculate the condensation at cut off ; and how you would infer the valve leak ?

B.Sc. EXAMINATION.

THERMODYNAMICS.

HONOURS.

SATURDAY, APRIL 15TH :—AFTERNOON, 2 TO 5.

Examiner, ...J. T. NICOLSON, D.Sc.

(*Not more than six.*)

1. Describe the construction of a temperature entropy chart. Show how curves of constant volume are plotted ; and how, with the assistance of a pressure temperature curve, the external work of evaporation may be represented.

2. Justify the assumption that the temperature v at any depth x, in a cylinder wall, whose surface is exposed to a simple harmonic variation of temperature of semi-range D is :

$$v = De^{-mx} \cos(\theta - mx)$$

when the crank makes the angle θ with its position at maximum surface temperature.

Find the value of m.

3. Find the range at depth 0″.04, if the range at surface is 10°; the speed being 60 revs. per min. Thermal conductivity of cast iron is 5.4; density 440 lbs. per cubic foot; specific heat 0.124.

4. Prove that the heat absorbed per sq. ft. per cycle, in question (2) is $\frac{6.36\ D}{m}$; where D is the semi-range at the surface.

5. One pound of wet steam, dryness x, latent heat L', is condensed at temperature t' and re-evaporated at t'', in a steam engine cylinder. Prove that the heat abstracted by the steam from the walls is:

$$L'(1-x) - \cdot 3\,(t'-t'')$$

Find the values when $x = 0.95$, $L' = 900$,
for $t' - t'' = 100°, 150°, 200°$.

6. Explain how the amount of condensation in a steam engine cylinder attains a limiting value, which it is difficult to exceed, when the wall temperature is the mean of the temperature cycle diagram.

7. Show how you would calculate the weight of steam condensed per hour on the clearance surfaces of a steam engine from an indicator card and the wall temperatures.

8. State what you know about the law of leakage of steam in slide valves.

THIRD YEAR.

DYNAMICS OF MACHINERY.

TUESDAY, APRIL 13TH:—MORNING, 9 TO 12.

Examiners, ... { J. T. NICOLSON, D.Sc. / HOMER M. JAQUAYS, B.A., B.Sc.

(*Not more than eight.*)

1. In the direct acting steam engine, find an expression for the crank effort in terms of the piston load for any angle of the crank.

2. In any form of quick return shaping-machine, find the relation between the force acting on the tool and the force acting tangentially to the crank pin path.

3. Find the ratio of the tractive force to the weight of a train which must cover one mile on the level from start to stop in three minutes. The train resistance is 21 lbs. per ton (independent of speed), and the brake resistance 450 lbs. per ton. Find where the brakes must be put on, and the average and maximum speeds.

4. Give Mohr's construction for finding the piston acceleration in the direct acting engine. Prove its correctness.

5. The co-efficient of friction of the wheel tires of a cart upon ice is 0.01. The wheels are 4 feet in diameter and the axles 3″. Find whether the wheels will turn or slide over the ice, if the coefficient of axle-friction is 0.1. Calculate the tractive force (horizontal) if the cart weighs 1 ton.

6. Enumerate the laws of friction; and state by whom they were respectively determined.

7. Find the efficiency of a screw press. The diameter of the screw is $1\frac{1}{4}$″, the pitch of the thread $\frac{3}{8}$″ (square thread); and the coefficient of friction of both screw thread and pivot is 0.1. Neglect guide friction.

8. Find the tension on the high speed belt of a thickness planer, if its velocity is 70 feet per second, and its weight per foot of length is $\frac{1}{4}$ lb. The belt embraces 150° of the smaller pulley, and the coefficient of friction is 0.4. The standing tension was 25 lbs.

9. The initial loads (W_0 and w_0) of a rope-brake are 800 lbs. and 20 lbs. The rope is $\frac{5}{8}$″ dia. and the wheel 5 ft. dia. When the engine runs at 275 revs. under steam the weighing machine balances at 400 lbs. and the spring balance reads 32 lbs. What brake horse power is the engine developing?

10. In the last question find the weight of cooling water that must be supplied per minute at 60° F, if it is allowed to rise to 120° F. If the thermal conductivity of cast iron is 5.4, and the rim of the brake wheel is 1 ft. wide and $1\frac{1}{2}$″ thick, find the temperature of the rope surface touching the wheel, if the inside of the rim is at 150° F.

B. Sc. EXAMINATION.

DYNAMICS OF MACHINERY.

TUESDAY, APRIL 4TH :—MORNING, 9 TO 12.

Examiner, ... J. T. NICOLSON, D.Sc.

(*Not more than nine to be attempted, questions marked thus * are for mechanical engineering students only*).

1. Investigate an expression for the work lost by friction in a lubricated journal. (30)

2. Find the alternating force and couple due to the acceleration of the moving parts of a steam engine with two cylinders, and cranks at right angles, as in a locomotive. (30)

3. Show how to calculate the mass and position of two balance weights placed at the ends of the crank shaft of a vertical compound engine, so as to eliminate vibration due to all reciprocating parts. Neglect the shortness of the connecting rod. (40)

4. Give the theory of either the von Hefner-Alteneck, or the Siemens epicyclic-train transmission dynamometer. (40

5. Show how to draw a curve of controlling force for a governor after the manner of Hartnell. Sketch such curves for a governor which is : (*a*) stable ; (*b*) unstable ; (*c*) isochronous. Show how frictional resistance and power are exhibited in the figures. (40)

6. *Apply the force and cord polygons to find the controlling force of a Proell governor in any position. (50)

7. Find the loads on the front and back wheels of a street tram car weighing 10 tons, which speeds up, under a constant torque, to 15 miles per hour in seven seconds. The wheel base is 7 feet. The centre of mass is 5 feet above rail level ; and the people are crowded on the back of the car so that there is two tons more weight on the back axle than on the front. (50)

8. The two cars of a railway inclined at 45°, are connected together by wire ropes over a pulley at the top. The cars weigh 6 tons empty, and 8 tons full ; their resistance to motion being one hundredth of their weight. The railway is 400 feet long, and a journey is performed in 30 seconds, by applying a constant torque on the top pulley until the speed attains a maximum of 16 feet per second ; after which the cars come to rest under the action of gravity. Find : first, their acceleration when coming to rest ; next, that with which they speed up ; and lastly, the maximum horse power exerted. (60)

9. Prove that in order to rotate the angular momentum $I\Omega$, with the angular velocity ω, a couple of magnitude $I\Omega\omega$ must be applied. Show also in what plane, and in what sense in that plane, it must act. (40)

10 Assuming, for the purposes of this question, that the centre of mass of a man (machine included) riding a bicycle remains constantly in the plane of the hind wheel, and is at a height of 4 ft. above the ground; at what angle must that plane be inclined when he is rounding a curve of 30 yards radius at 15 miles per hour? What is the effect on this inclination of the gyrostatic action of the wheels? Each wheel weighs 6 lbs., is 20 inches diameter, and has a radius of gyration of one foot. The man weighs 150 pounds.

11. If a force P acts on a rocking lever perpendicularly to its centre line, and at a distance x from its journal; prove that the force acting on the journal is :

$$Q = P\left[1 - \frac{xa}{k^2 + a^2}\right].$$

Here a is the distance between the centres of mass and of the journal, and k is the radius of gyration of the lever about its centre of mass.

Where must P act so that there may be no reaction from the bearing (except gravity and centrifugal force.) (40)

(12.) The time of a small oscillation of an engine connecting rod of 100 lbs. weight about its small end is $\frac{1}{5}$ second. The centre of mas is 17 inches from the same end. Find its moment of inertia. (50)

(13) *Investigate the theory of centrifugal separation. Discuss, in the light of your result, the form of steam and water separator you consi-sider best adapted to carry out its purpose. (60)

B. Sc. EXAMINATION.

DYNAMICS OF MACHINERY.—HONOURS.

TUESDAY, APRIL 4TH :—AFTERNOON, 2 TO 4.

Examiner ..... J. T. NICOLSON, D. Sc

1. Invest gate the acceleration forces acting on an engine connecting rod. (75)

2. A street car travelling v ft. per sec. takes a curve of radius r ft The length of the wheel base being l ft., and the car's moment of inertia about a vertical axis through its centre of mass being mk^2; find the forces between wheels and rails. (100)

3. Show how to find the size and position of the balance weights on the crank webs of a Brotherhood engine. (60)

(4) Allow for friction and other losses in the theory of any transmission dynamometer with which you are familiar. (60)

(5.) A Corliss inlet valve is equivalent to a strip of cast-iron weighing 56 lbs. concentrated at the radius of the valve casing, which is 6 inches diameter. It shuts off the port, 1 inch wide, in one ninetieth of a second under a (uniform) force from the dash pot, which acts on the valve crank 6 inches long. Take this crank in any position you choose and work out the reactions on the bearings of the valve spindle, which are 30 inches apart. The valve crank overhangs 10 inches. (100)

B.Sc. EXAMINATIONS.

MECHANICAL ENGINEERING.

FRIDAY, APRIL 7TH:—MORNING, 9 TO 1.

Examiners, ... { JOHN T. NICOLSON, D.Sc. / R. J. DURLEY, MA.E., A.M.INST.C.E.

(*Not more than seven questions to be attempted.*)

1. Explain how to draw the ideal combined indicator diagrams for the *HP* and *LP* cylinders in a compound engine, the effect of receiver volume, clearance and crank angle being neglected. Hence show how to determine the sizes of cylinders, and the cut off in each (*a*) so as to have no loss from drop, (*b*) so as to divide the power equally.

2. A compound locomotive has two *HP* cylinders each $13\frac{3}{4}''$ dia. and two *LP* cylinders each $20\frac{3}{4}''$ dia., the stroke being $24''$. The dia. of the driving wheels is $63''$, the working pressure is 200 lbs. per sq. inch by gauge, and the cut off in the *HP* cylinders when running 30 miles per hour is 0.35. Allowing for a back pressure in the *LP* cylinders of 5 lbs. per sq. inch by gauge, find the probable *IHP* supposing the diagram factor to be 0.45. If the mechanical efficiency is 0.8, find the mean tractive force at the speed named. $\text{Log}_e 6.5 = 1.872$.

3. Give a brief account of the construction and working of the quick action Westinghouse air brake, explaining clearly the difference between a "service" and an "emergency" application of the brakes.

4. What are the different ways in which heat is wasted in the working of a steam boiler? Explain how to estimate the efficiency of a boiler.

5. In boilers working a surface condensing engine, oil used for lubricating the cylinders has an injurious effect. Give the reasons for this, and discuss any remedies or precautions to be adopted.

6. A battery of boilers working 24 hours per day evaporates 30,000 lbs. of water per hour at 115 lbs. pressure by gauge from a feed temperature of 80° at an expense (for coal only) of 18 cents per thousand pounds of water evaporated. If an economiser (total cost $12,000) were installed, the feed temperature would be raised to 220°. Allowing 10 per cent. per annum for interest and depreciation together on the cost of the economiser, and assuming that all other expenses remain the same, find the saving effected by introducing the economiser.

Latent heat of steam at 130 lbs. abs. = 869.4 B.T.U.
Temperature " " " = 347° F.

7. A single acting pump has a plunger 7″ dia. and 18″ stroke. The well is 5 feet below the suction valve, which is guided above (co effi cient of resistence 2·5). The clearance volume is equal to the plunger displacement. The suction pipe is 10″ diameter and has one square bend in it (no vacuum vessel). Find the highest speed the pump will run without breaking the suction column. Plot curves from which the available head at every point of the stroke may be obtained for this speed. The pump is crank driven, and the connecting rod is very long The length of suction pipe is 10 feet.

8. In such a pump as that of the last question, only with a vacuum vessel, find the quantity of water which flows into and out of the vacuum vessel every revolution.

If the pressure in the vacuum vessel is not to vary by more than $\frac{1}{20}$th part of its least value, find the ratio of the volume of that vessel to that of the plunger displacement.

9. Sketch carefully either a Lancashire or a Babcock-Wilcox steam boiler.

10. Describe with sketches the action of either a Pulsometer or a Parson's steam turbine.

FIRST YEAR.

DESCRIPTIVE MECHANISM.

WEDNESDAY, APRIL 12TH:—MORNING, 9 TO 12.

Examiners,..... ..... { JOHN T. NICOLSON, D.Sc. / R. J. DURLEY, MA.E., A.M. INST. C.E.

(*Answers are to be illustrated with sketches wherever required, otherwise full marks will not be obtained for a correct answer. Not more than ten questions to be attempted.*)

1. Describe the form of the cutting end of a paring chisel, explaining exactly the method of sharpening, and the reasons for adopting the form you describe. (10)

2. How is a file cut? Explain the action of a file when used on a metal surface. (10)

3. How would you proceed to prepare a surface-plate having as nearly as possible an accurately plane face, supposing that no other surface plate is available. (15)

4. Sketch the form of the ordinary flat drill point. What are the objections to its use, and what form can you adopt which avoids such objections? (10)

5. How would you secure an iron bolt into a block of masonry? (10)

6. Describe the process of riveting a boiler seam by hydraulic pressure. (15)

7. Explain how the safety valve of a steam boiler acts, and sketch its construction. (15)

8. Why is it necessary to have an air pump attached to the condenser of a steam engine? (10)

9. How are the ends of railroad rails secured to one another? (15)

10. Explain how provision is made for wear that takes place (*a*) in the bearing of an ordinary shaft, or (*b*) in that of a bicycle wheel or crank axle. (15)

11. Give a brief general description of the essential parts of the propelling machinery of a screw steamship, naming the purpose of each portion. (20)

12. Describe any form of pump suitable for boiler feed purposes. (20)

13. What are the chief differences between American and English practice in constructing locomotives? (25)

14. Give a brief general account of the arrangements at some stations for generating electricity by means of water power (*e. g.* Niagara, Lachine or Chambly). (25)

SECOND YEAR.

KINEMATICS OF MACHINES.

MONDAY, APRIL 10TH:—MORNING, 9 TO 12.

Examiners, ... { JOHN T. NICOLSON, D.Sc.
R. J. DUBLEY, MA.E., A.M. INST. C.E.

(*Not more than ten questions may be attempted. Figures give proportional marks.*)

1. Explain the meaning of the terms:—Link, Element, Inversion of a pair, Closure of a chain. (10)

2. What is meant by the "Virtual Centre" of one body with reference to another? State and prove the geometrical relation existing between the virtual centres of any three bodies having relative motion in a plane. (20)

3. A street car starts from rest, and its distance from the starting point is observed to be:—

Time (seconds) 1 2 3 4 5 6 7 8 9 .....
Distance (feet) 5 13 25 41 65 91 117 143 169.....

Draw curves of position, velocity, and acceleration on a time base to any convenient scale, marking on your diagram the numerical values of (*a*) the velocity at the end of 3 seconds, (*b*) the average acceleration during the first second. (25)

4. Show how to draw polar diagrams of displacement, velocity, and acceleration for a particle having simple harmonic motion of given period and amplitude. (20)

5. Make sketches showing the various inversions of the double slider crank chain. Show that a point on the link carrying elements of the two turning pairs describes an ellipse with reference to the link carrying elements of the two sliding pairs. (20)

6. Sketch a form of straight-line motion whose action depends on the copying of an existing straight line guide. (15)

7. The leading screw of a lathe has 4 threads per inch, right handed; the change wheels have from 20 to 130 teeth, rising by five. Arrange wheels to cut (*a*) a right hand thread 10 per inch, (*b*) a left hand thread 6 per inch. (15)

8. What is an epicyclic wheel train? Sketch, and give numbers of teeth for, an epicyclic reverted train having a velocity ratio of 1-1000. (15)

9. Sketch the arrangement of the wheel train in an ordinary clock, and describe some one form of the mechanism employed to regulate its rate of movement. (15)

10. Sketch some one form of chamber crank train, pointing out the class of mechanism from which it is derived. (10)

11. Explain how an ordinary lift pump may be regarded as a ratchet train. (10)

12. What are dead-points in a kinematic chain, and how may they be avoided? (10)

SECOND YEAR.

MINING.

WEDNESDAY, APRIL 12TH.

Examiner,.....JOHN BONSALL PORTER, PH.D.

1. If you were seeking Copper or Lead Ores in a mountainous country, where and how would you go about your work, and what indications would you look for?

2. Describe in detail the methods of gold washing as practiced in the west.

3. Name the methods in use for excavating hard rock and explain the operations of rock blasting, including brief statement of the methods of drilling blast holes, and of the nature and use of explosives.

4. Describe the several operations involved in conducting underground work in the case of a mine of considerable size working a vertical or nearly vertical vein of medium grade ore.

5. In what cases is it necessary to dress or concentrate ores; how in a general way is this ordinarily done, and what are the principles governing the operations?

FOURTH YEAR.

MINING.

MONDAY, APRIL 10TH.

Examiner,.....JOHN BONSALL PORTER, PH.D.

1. If prospecting in a mountainous country for silver lead ores, where and how would you search and what would you do in the event of finding ore? (In answering take into account the geological as well as the topographical possibilities of the country.)

2. If, in the case above stated, you should find an outcrop of rich galena, and on investigation this should prove to be exposed for about 50 feet, with a dip of 45° back into the hill, and should apparently extend with horizontal outcrop from a dyke cutting it off at right angles at one end to and under a cover of heavy rock drift lying at a very steep slope (50 ft. from dyke). How would you proceed with the preliminary development of the property?

3. How would you sink a small prospecting shaft in ordinary country with 20 ft. of drift to intersect a bed at depth of 200 feet? Assume both earth and rock to be fairly wet but not enough so to demand special methods of sinking. Also assume a rock needing fairly heavy timbering for 100 ft. and but little below that level. Describe the work in some detail, giving rough sketches of hoisting and pumping gear, timbering, etc.

4. Describe briefly the mechanism and method of use of a percussive machine drill, name the several forms of power most commonly used with such a machine, and state the advantages and disadvantages of each.

5. Sketch and describe the method of mining a steep vein not over six feet thick by means of underhand and over hand sloping, showing the progress of the work in the shaft and on at least three levels.

6. Explain by means of simple sketches and description the two general methods of working coal beds when nearly horizontal; and state the general conditions under which each method is to be preferred.

7. Give a brief description of the two methods of mining large masses of ore by means of (*a*) filling, (*b*) caving.

8. Describe in outline with simple sketches, a pumping and hoisting plant for raising 100,000 gallons of water and 100 tons of ore in 24 hours from a depth of 500 feet, and state the approximate horse power of the several machines required.

9. Name the several methods of ventilation of mines, and give a brief description of the method-apparatus you would advise for a fiery coal mine with an output of 2,000 tons per day.

10. Define very briefly high explosive, detonation, tamping, blown out shot and block holeing.

FOURTH YEAR.

ORE DRESSING AND METALLURGY OF GOLD, SILVER AND COPPER.

MINING ENGINEERING.

APRIL 8TH.

Examiners,..... ... . { JOHN BONSALL PORTER, PH.D. JOHN W. BELL, B.A.SC.

1. (*a*) What machines would you use to crush a concentrating ore? (*b*) What considerations would influence you in deciding how small to crush it? (*c*) How and why would you strive to limit the crushing to the fineness decided upon?

2. (*a*) Explain carefully the action of a jig, and (*b*) point out the fundamental differences between this action of a jig and that of a Vanner or table.

3 Given a mine producing 75 tons a day of ore No. 3, averaging 10 p.c. concentrates carrying 70 oz. silver per ton.

Given another mine producing 300 tons a day of ore No. 4, carrying $4 per ton in free gold and 3 p.c. of concentrates, assaying $60 per ton in gold and silver.

Describe in outline mills for treating each of these ores in the quantities stated, naming each operation and each machine, briefly stating the unctions of each machine and estimating the numbers of machines of each kind required for the work.

4. The tailings of a 50 stamp mill (on hard rock) assay $7 in gold and yield 85 7-10 p.c. of this on cyaniding. These tailings can be concentrated at a cost of 50 cts. a ton to a head assaying $27 and yielding 75 p.c. to cyaniding and a tail assaying $2. Assume that the cost of cyaniding concentrates is twice as much per ton as that of cyaniding the original tailings.

State whether you would cyanide direct or after concentration. Describe the cyanide method used, and state the approximate annual profit on the enterprise.

5. Name the operations involved in the English method of making Copper, and briefly describe them.

6. What is calcination, and what are the principal reactions which occur in roasting an ore, consisting of Copper Pyrites, Iron Pyrites and Quartz ?

7. Briefly describe a modern copper blast furnace and the method of working.

8. How is copper obtained from a 50 p.c. copper matte, and how would this copper be treated, supposing it to contain Gold and Silver ?

NOTE.

Answer questions 1 to 5 inclusive.
" 3 out of 4 of 6 to 9.

THIRD YEAR.

METALLURGY OF COPPER AND LEAD.

APRIL 12TH

Examiners, ... { JOHN BONSALL PORTER, PH.D. / JOHN W. BELL, B.A.SC.

1. Name the important ores of Copper and Lead, and briefly describe their occurrence in America.

2. State the reaction which would result from heating Iron Sulphide, Cuprous Oxide and Silica together. Also show how Metallic Copper can be made by combining correct proportions of Copper Sub-sulphide and Cuprous Oxide.

3. Name the operations involved in the English process of making Copper, and briefly describe them.

4. Explain what is meant by "calcination," and why is it often necessary before fusion.

What is Plattner's contact theory, and how does it explain the formation of sulphates in a roasting furnace?

5. Describe the Bessemerizing of Copper Matte. What grade of matte is required, and what are the principal reactions?

6. Explain why metallic iron decomposes lead silicate, and how lead is made by combining correct proportions of Lead Sulphide and Lead Oxide.

7. Briefly describe a modern lead blast furnace and the method of working.

8. Explain briefly how the Silver, Gold and market lead are produced from base bullion by the Parkes Process.

THIRD YEAR.

METALLURGY OF IRON AND STEEL.

WEDNESDAY, APRIL 12TH.

Examiners, ... { JOHN BONSALL PORTER, PH.D. / JOHN W. BELL, B.SC.

GROUP A. (Answer 2 out of 3.)

1. Name the metallurgical fuels, and describe those natural ones which are, or are likely to become, of considerable importance to this country.

2. Give a brief description of the modern method of making coke, and compare this fuel with the material from which it is made.

3. Name, classify and describe very briefly the materials of which we generally make furnaces, and describe the general construction of some well-known form of furnace.

GROUP B. (Answer 2 out of 3.)

4. How do you determine the amount of air theoretically required for the complete combustion of a fuel? What is the result of combustion attempted at exactly the theoretical air supply? What pro-

portion of air gives the most efficient combustion? Briefly explain the facts in this matter.

5. Show how a gaseous fuel produced by the partial combustion of raw fuel may, by the aid of certain modern methods and appliances, be made to produce higher calorific intensity and greater total effective heat than can be obtained from the direct use of the whole of the original fuel.

6. Define and explain "calorific power" and "calorific intensity." Show how the former may be determined, and the latter calculated from it. Explain why this calculated intensity cannot be attained in practice.

GROUP C. (Answer 2 out of 3.)

7. Describe the direct process for the manufacture of wrought iron, and give the reactions that take place.

8. Describe briefly the manufacture of pig iron. Outline the process from beginning to end, and give the reactions that take place in the blast furnace.

9. Describe one of the two great modern methods of making steel, giving both the acid and the basic modifications of the process.

THIRD YEAR.

RAILWAY ENGINEERING.

MONDAY, APRIL 17TH:—9 TO 12.30 A.M.

Examiners, ... { C. H. MCLEOD, MA.E. / J. G. G. KERRY, MA.E.

1. Describe briefly how you would proceed to lay out a box culvert for construction, mentioning the calculations necessary to locate its upper and lower ends, and the considerations that will determine the height at which it is to be placed.

2. Sketch roughly the general design of a wooden trestle, mentioning the purpose of each piece and the considerations that determine its size.

3. Describe how you would proceed to thoroughly test a foundation before building a masonry structure thereon.

4. Discuss the circumstances and positions in which it is and is not advantageous to use open timber culverts.

5. Make a sketch of the general shape and approximate dimensions of a masonry pier for a Canadian river, and state the duties of a resident engineer during its construction.

6. Mention the data that must appear upon the plan and profile of a location survey in order that an accurate estimate of the cost of construction may be made.

FOURTH YEAR.

RAILWAY ENGINEERING.—(*Paper I*)

MONDAY, APRIL 17TH :—9 TO 12.30 A.M.

Examiners,..... { C. H. MCLEOD, MA.E. / J. G. G. KERRY, MA.E.

1. State the general principles of the design of interlocking plants, and the situations in which they are necessary.

2. Discuss the precautions and means taken upon a Canadian railway to prevent the formation of snow drifts upon the track.

3. Mention the facts that you would determine before proceeding to design a large railroad yard? What is the usual distance centre to centre between the several classes of tracks?

4. Sketch three of the rail joints now in use, and mention the qualities necessary to a successful joint. When can continuous rails be used?

5. Describe how you would construct an earth road, and what precautions must be taken to keep it in good travelling condition.

6. What are the qualities required for a successful pavement? Describe in detail the laying of any one of the pavements now in common use and the inspection to which its materials should be subjected.

7. Mention the tractive force in lbs. per ton required with various surfaces, and explain why these figures are very important in the location of country roads? What are the usual limiting gradients for highways, and what are the maximum and minimum gradients on the best built roads? Up to what gradients are the several pavements suitable?

FOURTH YEAR.

RAILWAY ENGINEERING.—(*Paper II.*)

TUESDAY, APRIL 18TH:—9 TO 12.30 A.M.

Examiners, ... { C. H. MCLEOD, MA E.
J. G. G. KERRY, MA.E.

1. Describe what facts you would observe before deciding upon the dimensions of the structure necessary to pass the outflow from a given hollow.

2. Mention the considerations that determine the height at which a culvert should be built, and draw a rough sketch of a box culvert, explaining the design of its several parts.

3. What features must be especially considered while locating a bridge over a large river.

4. Draw a sketch of a wing abutment and explain the calculation of its dimensions. Under what circumstances is it preferable to a *T* or *U* abutment?

5. Draw a sketch of a wooden trestle from the cap up, mentioning the purpose of the various members. Discuss the decay of timber in trestles, and how it may best be provided for and prevented.

6. Describe briefly how you would design and place in position a bottomless caisson such as those used in the C.P.R. bridge at Lachine.

7. Describe a system of ditches to secure thorough drainage of a railway.

8. What are the functions of ballast? Mention and discuss the materials most frequently used for ballast.

9. Describe stub and split switches, and calculate the distance from frog point to switch stand for a number nine frog for both switches. What numbers of frogs are in common use, and in what positions?

10. Sketch the form of standard rail used to-day, and point out the most particular points in its design. How are rails tested? What weight of rail is used in Canada, and where?

11. Mention the positions where it is wise to use tie plates, and discuss their use in present practice.

THIRD AND FOURTH YEAR. (*Civil Engineering Course.*)

MUNICIPAL ENGINEERING. (*Sanitary.*)

SATURDAY, APRIL 1ST.

Examiner,.....R. S. LEA, MA.E.

1. Enumerate the points upon which you would require information in designing the distributing system for a combined fire and domestic water-supply.

2. Explain the functions of a distributing reservoir; and state the proper size, elevation, and location.

3. A surface supply is to be developed by the construction of a storage reservoir.

Mention the surveying and other field operations which would be necessary.

4. What objectionable characteristics would the water from such a source be liable to possess?

How may this be to a great extent prevented?

5. Describe, with sketches, the method of constructing a spill-way for an earthen dam.

How are the proper dimensions of the opening determined?

6. Explain the method of obtaining a water-supply by means of driven wells.

Under what circumstances can this system be used to advantage?

7. In the accompanying plan of a pipe system, what would be the loss of head in friction between A and B, with a draft at B of 1,500 gallons per minute?

M.Sc. EXAMINATION.

THEORY OF STRUCTURES AND BRIDGE CONSTRUCTION.

Examiner .....HENRY T. BOVEY, LL.D., M.INST.C.E.

1. Write a brief essay on the formulae usually adopted for the design of the tension and compression members of a bridge.

2. State the considerations which govern the design of the portal bracing for a bridge, and illustrate your remarks by an example.

3. Make all the calculations for a double track elevated railway, which is to be worked by electricity, the general dimensions being shown on accompanying sketch. In designing the columns, allowance must be made for the effect of a change of 60° Fahren. from the mean temperature.

N.B.—In addition to the above, the candidate submits a thesis on practical bridge construction, and discusses specific cases of short and long span bridges, with complete details.

M.Sc. EXAMINATIONS.

HYDROSTATICS AND HYDRODYNAMICS.

Examiner, ... HENRY T. BOVEY, LL.D., M.INST.C.E.

1. Show how to find the centre of pressure on a submerged surface.

A rectangle is immersed in three fluids, of densities 1, 2, 3, with its upper edge under the surface of the first fluid and with its lower edge 7 ins. below the surface. Show that the centre of pressure is 5 ins. below the surface, the same area of rectangle being in each fluid.

2. Explain what is meant by "velocity potential," "lines of flow," and "stream lines," and deduce Laplace's equation. Interpret this equation when the motion is in two dimensions and symmetrical with respect to one of the axes.

3. Show that a cylinder of height h and radius of gyration k, will float upright in any fluid if h^2 is less than $8k^2$.

4. Write a brief essay on one of the following:—

(*a*) Capillarity.

(*b*) The equilibrium and stability of a floating body.

(*c*) The motion of a sphere in a fluid.

M.Sc. EXAMINATION.

HYDRAULICS.

Examiner, ... HENRY T. BOVEY, LL.D., M.INST. C.E.

1. Explain what is meant by a free vortex, a forced vortex, and a compound vortex. In the latter case, if the velocity is directly proportional to

the distance from the axis, show that the free surface of the pressure columns is a paraboloid of revolution.

How is the compound vortex utilized in turbine construction?

2. A system of pipes consists of a main with a fall of 4 feet in 1,000 and two branches, the one with a fall of 3 feet in 600, giving 15 cubic feet per minute, the other with a fall of 1 foot in 200, giving 24 cubic feet per minute. The velocity of flow in the main is $2\frac{1}{2}$ feet per second. Find the diameters of the main and branches.

3. It is more economical to use large pipes and low pressures than small pipes and high pressures. Discuss this statement.

4. In a pipe of gradually varying diameter show that

$$z + \frac{p}{w} + \frac{u^2}{2g} + \int \frac{P}{A} \frac{F(u)}{w} ds = \text{a const.}$$

5. Q_w is the constant way-service in a main of length L, Q_m is the end service; Q^1_e is the total discharge for the same frictional loss of head when the whole of the way-service is stopped. Show that

$$(Q^1_e)^2 = Q^2_e + Q_e Q_w + \frac{Q^2_w}{3}$$

6. Show that the velocity of flow curve for a transverse section of a stream may be expressed in the form

$$v = - \frac{wi}{2k} y_2 + ay + v_s ,$$

and hence show that if $v_{\frac{1}{2}}$ is the mid-depth and v_m the mean velocity,

$$v_{\frac{1}{2}} - v = \frac{wih}{24k} .$$

Of what practical use is this formula?

7. Water flows steadily in an open channel of varying cross-section and slope. Deduce the general equation

$$z = a \frac{u^2_2 - u^2_1}{2g} + \int_o^l \frac{f}{m} \cdot \frac{u^2}{2g} ds ,$$

and hence show how to find an expression for the virtual slope $\left(\frac{dh}{ds}\right)$.

8. Describe a vortex turbine, and explain how you would determine the proper size and speed for a given supply and head of water.

For a supply of 64 cubic feet per second, under a head of 81 feet, de-

termine the speed, size, H.P., and efficiency of a vortex turbine, in which $d_1 = r_1 = 3d = 5 \times$ width of wheel, assuming that there is no velocity of whirl at outlet.

9. Discuss the conditions which govern the direct or sinuous motion of water in a uniform pipe, giving formulae for the loss of head.

10. One cubic foot of water per second enters a radial O. F. impulse wheel of 2 feet external and $1\frac{1}{2}$ feet internal diameter, at an angle of 60° with the radius and leaves without whirl. The effective head is 400 feet. The peripheral speed at the outlet surface is $20\sqrt{3}$ feet per second. Determine a, v_2, the outlet and inlet areas and depths, the H.P. and efficiency.

11. Give a brief statement of the theory of the centrifugal pump.

If the pump has vanes with radial lips, show that the efficiency cannot exceed .5, but that it might be increased to .875 by the addition of a whirlpool chamber.

Faculty of Law.

Faculty of Law.

FACULTY OF LAW.

FINAL EXAMINATIONS FOR DEGREE OF B.C.L.

ROMAN LAW—(*First Paper*).

SATURDAY, APRIL 8TH:—10 A.M. TO 12 P.M.

Examiner, ... PROF. WALTON.

1. Discuss the value of Roman law as an introduction to the law of this Province. How was it that the French law was based upon the Roman? Which branches of the French law were most strongly influenced, and which most slightly by the Roman law? Give the reasons for this.

2. Give an account of Justinian's codification. From what sources was it drawn?

3. Describe the *Legis Actio Sacramento*.

4. Explain the way in which the praetor came to modify the law.

5. Describe the old legal modes of manumission. What was the effect of informal manumission before the time of Justinian, and what change did he make?

6. Explain the power of a *paterfamilias* over the *person* of his *filiusfamilias*. To what extent was the rigour of the old law gradually softened?

7. What is the meaning of a "thing" in the Roman law? What are *res mancipi*, *res fungibiles*, *res incorporales*?

8. Define *traditio*. Was property transferred by *traditio* only? Explain *longa manu traditio* and *brevi manu traditio*.

9. Define a servitude. Distinguish praedial, personal, positive and negative servitudes. How does a servitude differ from an obligation? Illustrate your answer.

10. Discuss the so-called contrary servitudes, and explain the difficulty felt as to the servitude *oneris ferendi*.

FINAL EXAMINATIONS FOR THE DEGREE OF B.C.L.

ROMAN LAW (*Second Paper*).

SATURDAY, APRIL 8TH:—3 TO 6 P.M.

Examiner, ... PROF. WALTON.

1. In what ways could a real security be created in the later Roman Laws (*a*) over moveables, and (*b*) over immoveables? What were the rights of the creditor?

2. A. has the usufruct of a house. Owing to defective construction the roof needs to be restored. Can he call on B., the owner, to supply a new roof? If A. has a new roof put on, can he claim reimbursement from B.? Is our law the same as the Roman? Discuss the question fully.

3. Give a summary account of the development of the Roman Law as to the forms of wills.

4. A. who dies in A. D. 540 leaves a will in which B. is instituted as heir, but is directed by way of trust to hand over the whole *hereditas* to C. What are the rights of B. and C., and what are their liabilities respectively for the debts of A.?

5. State the law applicable to the following cases:

(*a*) A. sells to B. a vase which both believe to be gold. It turns out to be plated.

(*b*) A. goes to a painter whom he believes to be the celebrated artist *Titius*, and commissions him to paint a picture. When it is half finished A. discovers that the artist is not the *Titius* of whom he had heard, but is another man of the same name.

(*c*) A. on April 1st sells his horse Bellerophon to B., provided that his coachman C., whom he had sent to the fair the day before, has succeeded in buying him another horse. C. returns with a horse which he had duly bought on March 31st. Bellerophon is killed by accident before delivery to B.

(*d*) A. sells to B. the unborn foal of his mare. The mare dies before the foal is born.

(*e*) A. at Rome, sells to B. his house at Baiæ. Next day A. learns that the house was burnt down before the sale.

6. What is novation? Give the different varieties of it?

7. Explain *confusion* as a mode of extinguishing legal rights. What change made by Justinian lessened its frequency?

8. Give a summary account of the contract of *commodatum*, stating the rights and liabilities of the parties. Can there be *commodatum* of fungibles?

9. Discuss the rule as to the *periculum* or risk in the following cases of accidental destruction of the *res vendita* before delivery.

(*a*) A. sells a horse to B. It is killed by lightning.

(*b*) A. sells to B. 1,000 bushels of wheat; they form part of a larger quantity in his barn. The barn and wheat are destroyed by fire.

(*c*) A. sells to B. his whole stock-in-trade at a fixed price. The stock is destroyed by fire.

(*d*) A. sells to B. his black or his brown horse in the option of B. The black horse is killed accidentally. *Quid* if its death was brought about by A.'s fault.

10. What would be your advice to X., a Roman of the time of Justinian, in the following cases:—

(*a*) Y. had sold and delivered to him for cash a slave Stichus. Stichus, unknown to both X. and Y., suffered at the date of the sale from an illness of which he died shortly afterwards.

(*b*) X. and Y. agreed to exchange horses. X. is willing to perform his part of the bargain, but Y. refuses to perform his.

(*c*) X. and Y. agreed to exchange horses. X. delivered his horse to Y. and it died shortly afterwards. Y. now declines to deliver his horse to X.

(*d*) M. borrowed a horse from N. and died. The horse was found in M.'s stables by P., who was M.'s heir. P. believed that the horse had been M.'s property. Six months after M.'s death, P. sold the horse to X. After X. had possessed it for two years and seven months N. returned from Africa and claimed his horse.

FINAL EXAMINATIONS FOR DEGREE OF B.C.L.

CRIMINAL LAW.

TUESDAY, APRIL 11TH:—3 TO 6.

Examiner,.....HON. MR. JUSTICE DAVIDSON.

N.B.—Second Year Students are required to answer the first ten questions only.

1. What difference exists, as to responsibility, between a person under the age of seven years and a person of the age of seven but under the age of fourteen years?

2. Draw:—

(*a*) An information for murder.

(*b*) A motion for a writ of *certiorari*.

3. In this Province how many Grand Jurors

(*a* Require to be summoned?

(*b*) Have to concur to find a Bill of indictment?

What changes have recently been made in these respects and by what legislation?

4. What rights as to a mixed jury exist in this Province, in favour of the defence?

At what stage of the case and in what manner is the right secured?

5. What is a "stand by"? a challenge to the array? to the polls?

Name the different kinds of challenges to the polls.

6. A. on arraignment for murder stands mute. What is the effect?

7. Within what time must proceedings be commenced in the case of an offence punishable on summary conviction, and to which no special limitation is attached.

8. The evidence of one witness must be corroborated in certain cases. What are they?

9. State briefly the appeals which lie in criminal cases.

10. What are the powers of a Court of Appeal upon the hearing of any appeal?

11. (*a*) What is treason?

(*b*) Name the Statute which is commonly called "the Statute of Treasons."

12. Define :—

(*a*) Affray.

(*b*) Riot.

(*c*) Insurrection.

What is meant by "reading the Riot Act"? What is its effect?

13. State the rules in relation to :—

(*a*) The giving of evidence by an accused person during trial.

(*b*) The calling of the husband or wife, as the case may be, of such accused person.

Name the statute which applies.

14. Define an assault.

15. What is the difference between a robbery and a theft?

What is burglary?

FINAL EXAMINATION FOR DEGREE OF B.C.L.

MARRIAGE COVENANTS—PRESCRIPTION—LEASE AND HIRE—MUNICIPAL LAWS.

WEDNESDAY, APRIL 12TH :—3 TO 6.

Examiner, ... PROF. FORTIN.

1. What is *subrogation réelle?* When does it take place?

Quid if there be a considerable difference in the value of the immoveables?

2. What is the difference, as regards consorts or representatives, between *obligation* to pay debts and *contribution* to the same?

Give and explain the rules upon the subject.

3. What is the effect of the renunciation made by the wife or representatives to the community? Can the husband be then sued alone, for the whole, on account of debts contracted by his wife, with his authorization?

Quid as to debts arising out of his criminal offences: can these be recovered from the property of the community after dissolution?

4. What is precarious possession? How is it ended? (*Explain fully the acts which have this effect.*)

What is its effect:

(*a*) As to successors by universal title?

(*b*) As to purchasers in good faith from precarious possessors?

5. What things can be acquired by prescription? What things cannot? How many privileged prescriptions are there?

Explain the meaning and application of the rule that among privileged persons the privilege takes effect in matters of prescription.

6. What is the extent (*l'étendue*) of civil interruption of prescription as regards things, actions and persons?

Give the rules and their application.

7. What are the obligations of the lessor?

Quid as to damages in case of defects and faults in the thing leased?

8. What are the obligations of the lessee?

Quid in case of loss by fire?

What are the rights of the lessee?

Quid if there is a prohibition to assign or sublet?

9. What persons compose a local council? A county council? A municipal corporation?

10. Upon what grounds can the election of a councillor or mayor be contested? By whom?

Describe the proceedings of such contestation.

FINAL EXAMINATIONS FOR DEGREE OF B. C. L.

INTERNATIONAL LAW (PUBLIC AND PRIVATE), LAW OF PERSONS.

THURSDAY, APRIL 13TH:—3 TO 6 P. M.

Examiner,.....PROF. LAFLEUR.

1. What is the extent of the international responsibility of a state for judicial injustice committed within its jurisdiction? Discuss the position taken by the American Government in 1891 in declining responsibility for not prosecuting the persons guilty of the lynching of Italians in New Orleans, on the ground that this was a matter within the control of a particular state and not of the federal authorities.

2. Give an outline of the Behring Sea controversy.

3. Discuss the legitimacy of the cutting by a belligerent of submarine cables belonging to neutrals.

4. Examine the legality of the seizure by a belligerent cruiser of contraband goods on board a neutral ship

(*a*) When they are consigned to purchasers in a neutral port ;

(*b*) When they are to be forwarded to a neutral port and thence by rail or by another vessel under a through bill of lading to a belligerent port ;

(*c*) When they are carried as hand-baggage by passengers bound primarily for a neutral port, but holding through tickets to some ulterior point in belligerent territory.

5. A person of the age of 22, domiciled in Prussia (where the age of majority is fixed at 24 years) owns moveable and immoveable property in this province—

(*a*) Can he alienate such property without judicial or other authorization ?

(*b*) Assuming that such authorization is required, must it be obtained from the Prussian courts or from those of this province ?

6. Enumerate the rights and disabilities of foreign corporations in this province.

7. Have our courts jurisdiction to entertain an action—

(*a*) for damages for a trespass alleged to have been committed in Ontario ?

(*b*) for the cancellation of a lease of real estate in Ontario?

(*c*) for the redemption of a mortgage on lands in Manitoba, when both parties have their domicile in this province ?

(*d*) to set aside a mortgage on foreign lands on the ground that it was taken in pursuance of a fraudulent scheme to defraud creditors?

8. What is the status of a foreign receiver or liquidator before our courts, and what is the tendency of recent decisions in cases where his interests come in conflict with those of local creditors ?

9. Enumerate the principal civil disabilities of aliens in this province.

10. A. and B. both had their domicile of origin in Ireland, and

left that country for good, intending to settle in the Province of Quebec. They sailed for America in a vessel plying between Liverpool and New York, and A. died on the passage. B. reached New York and settled there with the intention of remaining, having abandoned his original project of coming to this province. After staying fifteen years in New York, B. suddenly reverted to his original plan, and left that city, intending to settle permanently in Montreal, but was killed *in itinere* in a railway accident in Vermont. What was the domicile of each of these individuals at the time of his death?

11. Distinguish between absolute and relative nullities in regard to marriage, and give illustrations.

12. In what cases can a minor be provided with more than one tutor, and what are the respective powers of such tutors.

SECOND AND THIRD YEARS.

FRIDAY, 14TH APRIL:—AFTERNOON, 3 TO 6.

Examiner..... PROF. MACMASTER.

1. May a common carrier contract against damage resulting from the negligence of his employees? Cite a leading case on this subject and state its effect.

2. May a common carrier limit the right of the consignee to recover damages caused to the article carried where the damages were not known to the consignee when he received the article and paid the freight? Cite the leading case on this point.

3. Briefly distinguish a charter party from a bill of lading.

4. Define the terms: "Ship's husband," "Dead freight," "Perils of the sea."

5. What principle was affirmed by the House of Lords in Bowes & Shand, L. R. 2 App. Cas. 455 (1877)?

6. What is the rule of interpretation of a Statute or Code laid down by the House of Lords in Bank of England & Vagliano, L.R. A. C. 1891, 145?

7. Was this rule ever affirmed by the Judicial Committee of the Privy Council in an Appeal from the Province of Quebec? If so, in what case?

8. Define "Salvage," "General Average" and "Stranding."

9. What is the true test to apply when we wish to determine whether a constructive total loss has occurred under a marine risk?

10. When is a ship deemed to be "seaworthy?" Is there any warranty in this respect in a contract of marine insurance? If so, what is it?

ADDITIONAL QUESTIONS FOR STUDENTS IN THE THIRD YEAR.

11. What is the meaning of the word "value," in the expression "value received" in a promissory note?

12. Is a promissory note written in lead pencil invalid by reason of being so written?

13. What is a bank cheque? Within what time should it be presented for payment?

14. If not presented for payment within proper time, what is the effect as regards the drawer in the event of the Bank upon which it is drawn becoming insolvent before presentment?

15. In determining within what time the presentment should be made, what should be taken into consideration?

FINAL EXAMINATION FOR DEGREE OF B.C.L.

OBLIGATIONS AND CONSTITUTIONAL LAW.

SATURDAY, 15TH APRIL:—3 TO 6.

Examiners ..... { Obligations.—MR. AIMÉ GEOFFRION. Constitutional.— PROF. WALTON.

N.B. First Year students answer all the questions in Obligations and omit Constitutional Law. Third Year students answer questions 1, 5, 6, 7 and 9 on Obligations and the questions on Constitutional Law.

1. Give your opinion on the following cases, with reasons:—

(*a*) A person of usually sound mind and full capacity enters into a contract while temporarily and accidentally insane. When he has recovered his reason the other party to the contract refuses to perform it. He, therefore, sues him to compel its performance.

(*b*) In the same case, the plaintiff instead of being usually capable, but temporarily insane when the contract was made, was interdicted for insanity, but made the contract in a lucid interval. He sues after having been relieved from his interdiction.

(*c*) Again, in the same case, the plaintiff is a married woman who contracted without her husband's authority, although it was required. She sues, however, with her husband's authorization. Are these actions well founded?

2. Enumerate the different incapacities to contract, indicating the different kinds; and explain their effects.

3. A person owes a debt for which he is liable to coercive imprisonment. He cannot pay it immediately in money, but he has more than sufficient assets to pay if time is given him to realise them. The creditor refuses to grant him a delay, and insists on sending him to jail if he does not give him in payment of his claim a property worth double its amount. To escape imprisonment, the debtor consents. Later, he attacks the transfer of the property as having been obtained by threats. The creditor pleads that he merely threatened to do what he was entitled to do. Decide the case.

4. When the consideration of a contract is contrary to law, to public order or to good morals, can what has been paid under it always be recovered?

5. An unemancipated minor sells to an innocent third party, to whom he represented himself as being of age, a horse for less than its value. The price is paid cash. Part of it is wisely invested, part of it is squandered by the minor. What are the rights and actions of either party, if any?

6. Give the rules governing the transfer of ownership in contracts for the alienation of things. Has the Civil Code made any important changes in the law on that subject? If so, point them out.

7. What are the different rights that a creditor may have if the debtor fails to perform his obligation. Explain fully.

8. Give the rule as to what damages can be recovered for the violation of a contractual obligation (*a*) in case of bad faith of the debtor, (*b*) in the other case.

9. Enumerate and explain briefly the conditions required for the exercise by a creditor of the rights and actions of his debtor; and for the impeachment by a creditor of the acts of his debtor.

N.B. These questions to be answered in a separate book :—

1. Explain how it is that English Constitutional Law is referred to in Canada?

2. Give a brief account of the history of the doctrine that there is no taxation without representation.

3. In what ways and upon what grounds may a provincial act fail to come into effect, or become invalid?

FINAL EXAMINATION FOR DEGREE OF B.C.L.

SUCCESSIONS—GIFTS—SUBSTITUTIONS.

TUESDAY, APRIL 18TH:—3 TO 6.

Examiner,.....HON. MR. JUSTICE DOHERTY.

N.B.—First year students to answer the first seven questions only.

1. What distinction, if any, do you make between the effects of incapacity to inherit, and those of the unworthiness that excludes from a succession.

2. A instructs a notary to make his will. The notary draws up the instrument out of the testator's presence, and subsequently in the presence of two competent witnesses reads it to the testator, who declares it to contain his will, and signs it in the presence of the notary and witnesses. The witnesses also sign in presence of the testator and at his request, and in each other's presence. While they are doing so, and before signing himself, the notary is called away. Before his return the testator dies.

Is the will void or valid?

Give reason for your answer.

3. A, at the age of 20, makes a will. He dies at the age of 30, without having revoked the will so made.

B, being of sound mind, makes a will. He subsequently becomes insane and is interdicted, and dies subject to such interdiction.

C, an interdict for insanity, recovers his soundness of mind. Being so of sound mind but the interdiction unremoved, he makes a will. The interdiction is subsequently removed, and C some years after dies leaving the will so made unrevoked.

What is the effect of the will in each case?

Reasons for your answers.

4. A by his will bequeaths to B his residence in the city, to C and D a farm, directing that they shall share it in the proportion of $\frac{2}{3}$ to C and $\frac{1}{3}$ to D, to E all his moveables. He makes no disposition as regards any residue.

(*a*) To what class does each of these legacies belong?

(*b*) If B die before, and the other legatees survive A, to whom would the house bequeathed to B go?

(*c*) If C renounce the legacy in his favor, all the other legatees surviving and accepting, to whom would the object bequeathed to C go?

(*d*) In the two latter cases, how would the devolution of the objects bequeathed to B and C, respectively, be affected had the testator added to his will a bequest of the residue of his estate to C.

Reason of your answer in each case.

5. A having by his will bequeathed a particular property to B, subsequently sells the property so bequeathed. Some years after this sale the property is reacquired by A, and at his death it forms part of his succession.

Does the bequest to B take effect?

Reason for your answer.

6. In what case or cases, if any, does our law consider the origin of property in regulating its transmission by succession?

7. A dies intestate—leaving surviving him

B, his eldest son;

C and D, his grandchildren, and children of a predeceased daughter, and who had renounced to her succession;

E, his second son, who renounces to A's succession;

G, H, and I, his grandchildren, children of E.

Who takes the succession, and how is it divided? Do any, and if so, which of the above-named relatives come to the succession by representation?

B, dies in minority and unmarried. There survive him—

C, his illegitimate child, in whose favor he has made a will bequeathing all his property;

D, his father;

E, his maternal grandfather;

G, his brother;

H, I, and J, his nephews, children of a predeceased brother.

Who takes the succession? If more than one, how is it divided?

8. What is the effect upon a *gift inter vivos*

(*a*) Of its being made dependent upon an illegal or immoral condition, or subjected to a resolutory condition, the fulfilment whereof depends upon some voluntary act of the donor?

(*b*) Of its being of future property;

(*c*) Of its being of a thing not belonging to the donor?

In any or all of these cases, would the validity of such donation be affected by the fact of its being made in a contract of marriage?

9. A gives a property to C, to be by the latter enjoyed during his C's lifetime, and the ownership, after his death, to go to C's children.

C. sells the property so given.

Can the sale so made be attacked during C's lifetime? If so, by whom? At C's death, are the rights of his children, if he leave any, affected by such sale? If he leave no children, but only grandchildren, have the latter at C's death any rights in the property so given?

10. A gives a property to B, charging him at his death to hand over to C another property which at the time of the donation belongs to B. The latter accepts the donation.

What is the effect of the charge so imposed upon B?

FINAL EXAMINATIONS FOR DEGREE OF B.C.L.

THIRD YEAR.

LAW OF REAL PROPERTY AND REGISTRATION.

WEDNESDAY, APRIL 19TH:—3 TO 6.

Examiner,.....PROF. MARLER.

1. A brewery contains vats, tuns and other plant used for the manufacture of beer, and horses and wagons for its delivery.

Are such vats, tuns, horses and vagons moveable or immoveable?

2. Of what does the account to be rendered on the eviction of a possessor from an immoveable consist?

3. A is the owner of a property on which he has built a house, of which the outer face of the gable wall corresponds with the division line between his property and that of B. B proposes to use this wall for a building he is about to erect higher than that of A, but of the same depth.

What indemnity, if any, must B pay?

4. The rights of an emphyteutic lessee are sold by the sheriff on an execution against him.

What is the effect of this sale:

(*a*) upon the proprietor,

(*b*) upon the purchaser?

5. A has purchased an immoveabe from B. A hypothec is shown by the certificate of search to be registered against it. The seller says the obligation secured by the hypothec has been paid; that, in any event, it is prescribed.

What are A's rights before and after the execution of the deed

If the deed contain a warranty of *franc et quitte*?

6. A, and B, his wife, are in community, and own their house. B dies intestate, leaving as her heirs-at-law two children and three grand-children representing a deceased child. What registrations are necessary before the house can be sold?

7. B has purchased A's farm and is in possession, but has not registered his title.

C obtains a judgment against A, registers his judgment against the farm and then has it seized by the sheriff.

B then registers his deed.

How would the judgment be registered? What is the effect of such registration? Discuss the merits of such registration and seizure.

8. What is the effect of a sheriff's sale?

9. Who can vacate such a sale, and on what grounds?

PRIVILEGES AND HYPOTHECS.

10. A merchant on the 15th February sold to a customer 1,000 bushels of wheat. 500 bushels were delivered before the end of February, and the remainder on the 10th March. The customer becomes insolvent on the 1st April. What privileges can the seller claim?

11. The Dominion Bridge Company sells to a manufacturer steel girders or beams to be used in the construction of a factory, and also a boiler and some shovels and barrows. The buyer becomes insolvent. What privilege has the seller for the unpaid price, as against the hypothecary and against ordinary creditors?

12. A tenant makes an abandonment of property and a curator is appointed on petition of the landlord. The moveables on the property are claimed by the unpaid vendors within the delay, and there is not sufficient to pay the curator's expenses and the landlord. How do the claims of these two creditors rank?

If the abandonment is made after an ordinary seizure by the landlord, on application of another creditor, how would a landlord's rent and the curator's expenses rank?

13. A clerk is employed by a manufacturer who becomes insolvent. What period of salary has he a privilege for, and state whether it can be paid out of the sale of book-debts due to his employer?

NOTE.—The last four questions to be answered in a separate book.

FINAL EXAMINATION FOR DEGREE OF B. C. L.

THURSDAY, 20TH APRIL:—3 TO 6 P. M.

HISTORY—AGENCY—PARTNERSHIP—CORPORATIONS.

Examiner,..... PROF. McGOUN.

1. What were the functions of the Intendant under the Edict of creation of the Sovereign Council and its amendments?

2. What is the relation of Customary Law to Feudal Law? What is the provision of the Custon of Paris upon the property rights of married persons?

3. What is the relation between the Civil Code of Lower Canada and the Code Napoleon?

4. How is the acceptance of mandate proved as against the mandatory?

5. An agent holds certain bank stock in trust. He transfers it to another as security for his own debt. Is this transfer valid as between the agent and the real owner of the stock, or as between the bank itself and the owner of the stock?

6. How is a broker distinguished from an ordinary agent?

7. A commission merchant acting for a foreign principal purchases goods in his own name, but states to the seller the name of his principal. Who is liable for the debt?

8. A bookkeeper in a mercantile firm is paid a salary and also a percentage of the gross profits of the business. Does he thereby become a partner, liable to contribute to the losses?

9. In a limited partnership it is declared that the special partner has contributed $1,000.00 to the firm. It afterwards appears that $500.00 of this amount had been advanced by the special partner some time before the date when the limited partnership began, the rest was paid in cash. What would be the position towards creditors of the special partner?

10. A creditor owes $300.00 to a grocer doing business alone. The grocer takes in a partner and furnishes additional goods to the amount of $200.00 to the debtor. The debtor afterwards pays $200.00 and the grocer gives him a receipt on account of his own debt of $300.00. The debtor then becomes insolvent. Has the partner any right to question the application of the money received?

11. What restrictions exist on the right of corporations to hold real estate?

Note the general tenor of the French ordinance dealing with this matter, and also the effect of the latest amendments to the General Clauses Acts.

12. What is the extent of the liability of shareholders in an ordinary joint stock company and in a bank respectively: first, towards the Company or the Bank; secondly, towards the creditors of the Company or Bank.

13. To what corporations does the Winding-up Act (Canada) apply, and what provincial law applies to the liquidation of companies?

14. What responsibility is incurred by directors for watering stock and for declaring a dividend not earned? How can any director escape such responsibility?

FINAL EXAMINATION FOR DEGREE OF B.C.L.

CIVIL PROCEDURE.

MONDAY, 17TH APRIL:—3 TO 6.

Examiner.....PERCY C. RYAN, B.C.L.

1. A agreed by contract in private writing to pay to his brother B an alimentary allowance of $50 per month. A paid the allowance up to the time of his death. His heirs, C and D, refuse to continue the payments. B thereupon sues C and D, alleging the foregoing facts. The defendants wish to raise immediately the question of law as to the purely personal nature of the obligation and its intransmissibility to heirs. Draft the appropriate pleading, and state how you would join issue on behalf of B.

2. Before what jurisdiction must an action in warranty be brought? Into what classes are actions in warranty divided? Distinguish. Explain the effect of an action in warranty upon the principal suit.

3. Explain the relative functions of judge and jury?
What form does the verdict take, and what control has the judge over the submission of the issues to the jury?
What are the intermediate steps between verdict and judgment?

4. In what cases, within what delay and in what manner are appeals instituted from interlocutory judgments?
What power has an appellate court over interlocutory judgments when dealing with an appeal against the final judgment?

5. Is a creditor whose claim is not mentioned in the registrar's certificate entitled to appear in, and become a party to, proceedings for confirmation of title? Explain fully.

6. Can standing crops be seized? If so, by what process and upon observing what formalities?

7. A, a retail merchant, submits to B, a manufacturer, in April, a statement of his affairs showing a surplus of assets over liabilities amounting to $15,000. B, upon the faith of the statement, sells A goods to the value of $1,000. In October of the same year, while the

debt to B is still unpaid, A makes a private assignment by notarial deed for the benefit of his creditors, and accompanies it with a statement showing a deficit of $20,000. Upon being applied to for an explanation, A states that he is unable to give any.

What is the most stringent civil remedy which B can exercise against A, and in what manner is it exercised?

Draft the first proceeding in such a case.

What is the general effect of a private assignment?

8. In what respect does prohibition differ from appeal?

Have judges a discretion, and if so, within what limits, to grant or refuse prohibition?

When must the objection to the jurisdiction be raised first in the inferior court?

9. By a contract in notarial form, A agrees to sell to B, for a reasonable consideration, the stock, goodwill and other assets of a bakery, and engages that he will not enter the same business, during five years from date, within the limits of the city of Montreal. A afterwards enters the employ of a rival establishment at Montreal, and solicits customers of his old business within the prohibited time.

Draft the appropriate proceeding to restrain A from so soliciting his former customers.

10. A Company incorporated by Act of the Parliament of Canada commences business before the amount of stock required by law as a condition precedent to its operations has been subscribed. By whom could proceedings be taken to prosecute civilly such breach of the law? State the proceedings before the issue of the writ. Give the conclusions of the demand.

UNIVERSITY SCHOOL EXAMINATIONS, 1899.

Preliminary Subjects.

(In order of date of Examination.)

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UNIVERSITY SCHOOL EXAMINATIONS.

PRELIMINARY SUBJECTS.

ENGLISH GRAMMAR.

MONDAY, JUNE 12TH :—MORNING, 9 TO 10.30.

(*N. B.—Not more than two questions in each section to be answered.*)

A.

1. Give in tabular form the feminines of :—
Lad, fox, hero, marquis, bachelor
And the plurals of :—
Roof, index, cow, crisis, vicar-general.

2. Give the rules with examples for forming the degrees of comparison of adjectives.

3. Correct, if necessary, the following sentences :—
A great and a good man looks beyond time.
It cannot be me you mean.
Thomson's "Seasons" is now comparatively speaking little read
Lying by the fire, the heat is felt.
Neither of the workmen had their tools with them.

B.

4. Distinguish weak and strong verbs.
Give the first person singular, past indicative and the passive participle of :—
Begin, cling, seethe, hew, work, bereave.

5. Define and illustrate with short sentences :—
Complementary Nominative, Cognate Objective, Apposition, Indirect Object, Representative Subject.

6. Parse the words in italics in the following sentences :—
Considering philosophers of *past* times enquired into the *why* of most things, *why* did they not *consider* whence sprang the *virtues* of *humility* and gentleness ?
Wide waves the *eagle* plume.

C.

7. State the various kinds of pronouns and give examples.
Show the pronominal use of *that* and *as* by short sentences.

8. Analyze :
He has not read as much as I.
The great man down, you mark his favorite flies ;
The poor advanced makes friends of enemies.

DICTATION.

MONDAY, JUNE 12TH :—MORNING, 10.30 TO 11.

High up against the horizon were the huge conical masses of hill, like giant mounds intended to fortify this region of corn and grass against the keen and hungry winds of the north; not distant enough to be clothed in purple mystery, but with sombre greenish sides visibly specked with sheep, whose motion was only revealed by memory, not detected by sight; wooed from day to day by the changing hours, but responding with no change in themselves—left for ever grim and sullen after the flush of morning, the winged gleams of the April noonday, the parting crimson glory of the ripening summer sun. And, directly below them the eye rested on a more advanced line of hanging woods, divided by bright patches of pasture or furrowed crops, and not yet deepened into the uniform, leafy curtains of high summer, but still showing the warm tints of the young oak and the tender green of the ash and lime. Then came the valley, where the woods grew thicker, as if they had rolled down and hurried together from the patches left smooth on the slope, that they might take the better care of the tall mansion which lifted its parapets and sent its faint blue summer smoke among them.

(N. B.—Directions to the Local Examiner :—

Read the extract *three* times aloud to the candidates.

1. Fluently, in order to convey the general sense of the passage : during this reading all pens must be laid on the desks.

2. Slowly, for the candidates to take down.

3. For punctuation and general revision.

Any word, or group of words, may be repeated at the request of a candidate.)

ENGLISH ESSAY.

MONDAY, JUNE 12th :—MORNING, 11 TO 12.

Write an essay of not less than *one* page on any *one* of the following subjects :—

(*a*) Presence of Mind.

(*b*) Your favorite Hobby.

(*c*) An Anglo-American Alliance.

ARITHMETIC.

TUESDAY, JUNE 13TH :—MORNING, 9 TO 10.30.

Answer two questions from each division. All the work must be shown; results alone will not be valued.

SECTION I.

1. Find

(*a*) The Highest Common Factor of 36,565 and 88,253.

(*b*) The Least Common Multiple of 12, 30, 55, 72, 108, and 132.

(*c*) The sum of $\frac{3}{7}$ of 5 guineas, $1{\cdot}8\dot{3}$ of £4, and $\cdot\dot{3}$ of $\frac{1}{2{\cdot}8}$ of $\cdot 6$ of £2, 14s.

2. On May 1st, a garrison of 288 men is supplied with provisions sufficient for 24 weeks. On June 26th the garrison is re-inforced by 96 men. How long will the provisions last ?

3. For each of three succeeding months the population of a Klondike town rose 50 per cent. above that of the preceding month ; and at the end of the third month was 2,700. What was the population at the beginning of the time ?

SECTION II.

4. What is the difference between the true discount and the discount charged by a bank on $1,368 due in 2 years and 4 months at 6 per cent.?

5. What is the length of a side of a square field whose area is 20,736 sq. feet ?

Find also, to two decimal places, the distance diagonally across this field.

6. A man having money to invest has an opportunity of purchasing 5 per cent. stock at 95, but delays until it has risen to 110. By what per cent. is his income less than if he had purchased at the first price ?

SECTION III.

7. What is the value of a rectangular field 450 metres long and 230 metres wide (*a*) at $220 per hectare ; (*b*) at $100 per acre ?

8. A gentleman has a rectangular lawn 108 feet long and 60 feet wide enclosed by a fence. He makes a cinder path around the lawn just inside the fence, and two paths at right angles to each other through its centre. The paths are uniformly 6 feet wide. The rest of the lawn he has turfed. Find the total cost, the path being worth 48 cents and the turf 30 cents per square yard.

9. How many cubic metres are there in a sheet of ice 32 metres long, 17 m. 50 cm. wide and 50 cm. thick ?

Water expands one-ninth in freezing: find the weight of this sheet of ice and the volume of water obtained by melting it.

A. ENGLISH HISTORY.

TUESDAY, JUNE 13TH:—MORNING, 10.30 TO 12.

Answer any three parts of each question.

1. Make biographical notes on :

(*a*) Stephen Langton.

(*b*) Sir William Wallace.

(*c*) Sir Francis Drake

(*d*) Robert, Lord Clive.

(*e*) Sir Robert Peel.

2. Name the opposing parties in the following battles, and also give the date of each battle with its result.

(*a*) Hastings.

(*b*) Agincourt.

(*c*) Naseby.

(*d*) Blenheim.

(*e*) Waterloo.

3. Define the scope of the following measures :

(*a*) Magna Carta.

(*b*) The Petition of Right.

(*c*) The Test Act.

(*d*) Walpole's Excise Bill

(*e*) The First Reform Bill.

4. Connect an event with each of the following dates :

(*a*) 597.

(*b*) 1588.

(*c*) 1640.

(*d*) 1745.

(*e*) 1815.

CANADIAN HISTORY.

Answer any three parts of each question.

1. Make biographical notes on :

(*a*) Jacques Cartier.

(*b*) Samuel de Champlain.

(*c*) Louis de Buade, Comte de Frontenac.

(*d*) James Wolfe.

(*e*) Sir Isaac Brock.

2. Write precise and accurate comments on the following sieges and battles, giving dates and results :

(*a*) The first siege of Quebec.

(*b*) The second siege of Louisbourg.

(*c*) Montcalm at Ticonderoga.

(*d*) Braddock's Defeat.

(*e*) The Battle of Chateauguay.

3. (*a*) Give a list of the principal tribes of Indians so far as they are connected with Canadian History.

(*b*) Under what circumstances were the Acadians expelled ?

(*c*) Mention the terms of the Quebec Act.

(*d*) Who were the U. E. Loyalists, and where did they find homes ?

(*e*) Explain the term "Family Compact."

4. Connect an event with each of the following dates :

(*a*) 1497.

(*b*) 1689.

(*c*) 1763.

(*d*) 1791.

1842.

PRELIMINARY GEOGRAPHY.

FRIDAY, JUNE 16TH :—AFTERNOON, 2 TO 3.

(N. B.—Answer two questions only from each group.)

I.

1. Draw a map of the Gulf of St. Lawrence, showing Newfoundland Anticosti I., Prince Edward I., Cape Breton I., and North coast of Nova Scotia.

2. Draw a map of British India, showing the Indus, the Brahmapootra, the Himalayas, Delhi, Bombay, Calcutta and Madras.

3. Explain :—Equator, Latitude, Isthmus, Water-Shed, Zone, Glacier, Cyclone, Spheroid, Climate, Marsupials.

II.

4. Where are :—Queen Charlotte Islands, James Bay, Salt Lake City, Cape Sable, Hayti, Acapulco, Venezuela, Valparaiso, Strait of Magellan, Falkland Islands.

5. What is the practical importance of Ocean Currents ? State the direction and effect of the Gulf Stream.

6. Indicate by a map, marking the capitals of the countries included, the routes by rail and sea from London (Eng.) to Naples.

III.

7. Prove that the form of the earth is spherical.

8. Name the chief countries comprised in the Chinese Empire, indicating their position by drawing or otherwise. Locate the Gulf of Pechili.

NEW TESTAMENT HISTORY.

FRIDAY, JUNE 16TH :—AFTERNOON, 3 TO 4.

N.B.—*Answer two questions in each group.*

I.

1. Relate all the circumstances attending the visit of the Magi to the infant Saviour : where is the account given ?

2. To which Evangelist are we indebted for the account of our Lord's first miracle ? Reproduce his account in your own words.

3. Tell the story of our Lord's interview with the woman of Samaria, giving particulars as to time and place.

II.

4. Name five places in Galilee, noting an important event in Our Saviour's ministry which happened at each.

5. Describe as minutely as you can the events of the first day of the week in which our Lord was crucified.

6. Write the seven sayings of our Saviour on the cross.

III.

7. Relate the circumstances leading up to and attending the death of Ananias and Sapphira.

8. Write the substance of the account given in the Acts of the conversion of Cornelius.

9. Give in outline a description of St. Paul's last voyage to Rome.

TAYLOR'S OUTLINE OF MODERN HISTORY.

FRIDAY, JUNE 16TH :—AFTERNOON, 3 TO 4.

1. Write what you know upon any five of the following topics.

(*a*) The abolition of the slave trade.
(*b*) The Irish famine of 1846.
(*c*) The French Republic of 1848.
(*d*) Trades Unions.
(*e*) The first Atlantic cable.
(*f*) The Alabama claims.
(*g*) The Ballot Act.
(*h*) British annexation of Burmah.

2. Make brief but clear notes on :—

(*a*) The Cato street conspiracy.
(*b*) The Stocton and Darlington Railway.
(*c*) Rome as the capital of modern Italy.
(*d*) The Zulu war.
(*e*) The Irish Land League.

WRITING.

FRIDAY, JUNE 16TH :—AFTERNOON, 4 TO 4.15.

1. Write all the letters of the alphabet in capitals.

2. Write the numerals from 1 to 20.

3. Write the following :—

> "What is the voice I hear,
> On the wind of the Western sea?
> Sentinel, listen from out Cape Clear,
> And say what the voice may be.
> 'Tis a proud, free people calling loud to a
> people proud and free.

4. Give your name in full, the name of your school, your age, and state how long you have employed the vertical style of writing, if you use it at all.

Optional Subjects.

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Optional Subjects.

OPTIONAL SUBJECTS.

ALGEBRA.

MONDAY, JUNE 12TH :—AFTERNOON, 2 TO 3.30.

1. Find : (*a*), the square root of $1 - 6a + 11a^2 - 2a^3 - 11a^4 + 4a^5 + 4a^6$; (*b*), the highest common factor of $a^4 + a^2 + 1$ and $a^4 - 2a^3 + a^2 - 1$; (*c*), and the least common multiple of a, $a^2 + a$, $a^3 + 1$, $a^3 + a^2 + a + 1$, and $a^4 - 1$.

2. Simplify

(*a*) $\dfrac{(a-b)(b-c)(c-a)}{abc} + \dfrac{b-c}{a} + \dfrac{c-a}{b} + \dfrac{a-b}{c}$.

(*b*) $\dfrac{a^4 - 8a}{a^2 - 4a - 5} \times \dfrac{a^2 + 2a + 1}{a^3 - a^2 - 2a} \div \dfrac{a^2 + 2a + 4}{3a - 15}$.

3. A boy has a bag of nuts. He gives $\frac{3}{8}$ of them to his sister, 3 more than $\frac{5}{12}$ of the remainder to his brother, and finds that he has exactly $\frac{1}{3}$ of the original number left. How many had he at first ?

4. Divide $6a^{\frac{2}{5}} - 7 - 7a^{-\frac{2}{5}} + 6a^{-\frac{4}{5}}$ by $2a^{\frac{1}{5}} - 3a^{-\frac{1}{5}}$, and simplify $\dfrac{\sqrt{a} + \sqrt{b}}{\sqrt{a} - \sqrt{b}} - \dfrac{\sqrt{a} - \sqrt{b}}{\sqrt{a} + \sqrt{b}}$.

5. Solve

(*a*) $\dfrac{3x-2}{6} - \dfrac{x+3}{4} + \dfrac{2x+1}{8} = \dfrac{5x+7}{12}$.

(*b*) $\begin{cases} x + 2y + z = 4, \\ \frac{x}{2} = 3z + 1, \\ 2x = y + \frac{z}{3} + 3. \end{cases}$

(*c*) $2x^2 + 5x = 12$.

(*d*) $\dfrac{x-1}{x-2} - \dfrac{x-2}{x-3} = \dfrac{x-5}{x-6} - \dfrac{x-6}{x-7}$.

6. If a bicyclist travelled 2 miles an hour faster, he would take one hour less to go 60 miles : How long does it take him to go that distance ?

FRENCH.

MONDAY, JUNE 12TH :—AFTERNOON, 3.30 to 5.30.

Note.—Question D will be read at 5 o'clock.

A. Translate into English. :—

L'HERBE PRÉCIEUSE.

Deux servantes, Louise et Marie, allaient à la ville voisine. Chacune d'elles portait sur sa tête une corbeille de fruits extrêmement lourde. Louise ne cessait de se plaindre et de soupirer ; Marie, au contraire, badinait et riait sans cesse. "Comment pouvez-vous rire, lui dit Louise, votre corbeille est au moins aussi lourde que la mienne, et mes forces sont égales aux vôtres ?" Marie reprit : "J'ai ajouté une certaine plante à mon fardeau, et de cette manière je le sens à peine ; faites comme moi, et vous en serez bien contente."

Louise s'écria : "Cette plante doit être bien précieuse, sans doute. Je désirerais fort en avoir pour rendre ma charge plus légère. Dites-m'en le nom, je vous en prie beaucoup ! "

"La précieuse plante," répondit Marie en riant, "qui seule peut alléger tous les fardeaux, s'appelle *la Patience.*"

B. Translate into French :—

That is a history of Canada you have in your hand, is it not ? Will you have the goodness to open it and read the thirtieth page ? You will learn, perhaps for the first time, that your native land has an institution which is almost as old as the famous American University of Harvard. A school for Indian children was founded at Quebec in the year one thousand six hundred and thirty.

At that time the city was in the midst of a vast forest. The English flag was not unknown there, for during a brief period Quebec was occupied by English sailors. But more than a century and a quarter was to pass before the arrival of General Wolfe in the St. Lawrence. Those were glorious days when Wolfe ascended the high banks of the great river and fought the French troops on the plains of Abraham. The result of the battle was for a long time doubtful, but everybody knows how it ended. Both Generals fell, and now a beautiful monument has been erected at Quebec to do honour to their bravery and to perpetuate their memory.

C. Grammatical questions.

1. Write the following sentences in the plural :

L'œil est un miroir. Le cheval est le serviteur et l'ami de l'Arabe. Le chien est le compagnon de l'homme. Le coucou est un oiseau. Ce local est un bijou. Le chameau est le vaisseau du désert. Le travail est

un épouvantail pour le paresseux. Le cou du cygne est une proue, et sa queue un gouvernail. Ce minéral est un poison. Un sceptre est un fardeau. Ce chat est un matou. Un conquérant n'est ni un héros ni un dieu; c'est un fléau.

2. Indiquez cinq règles de la formation du féminin des adjectifs avec un exemple pour chaque règle.

3. Replace the nouns in *italics* in the following sentences by corresponding pronouns:

Les hommes louent la vertu mais *les hommes* ne pratiquent pas *la vertu*. L'homme oublie plus de choses que *l'homme* ne retient *de choses*. Il vaut mieux souffrir le mal que de faire *le mal*. Si l'on accuse votre ami absent défendez *votre ami*. La raison supporte les disgrâces, le courage combat *les disgrâces*, la patience et la résignation surmontent *les disgrâces*. Jupiter irrite *Jupiter* contre Apollon, chasse *Apollon* du ciel et précipite *Apollon* vers la terre. Dieu nous fit une âme capable d'aimer *Dieu* et de connaître *Dieu*.

4. Change the verbs in *italics* in the following sentences to the tense which the sense requires:

Un auteur se *peindre* dans ses ouvrages. *Avoir* de la patience, *être* laborieux, et tu réussiras. Je crains que cet enfant *n'être* menteur. *Faire* du bien à un ingrat, vous ne *parvenir* jamais à changer son cœur. Les crocodiles *être* petits en *naître*, mais en *avancer* en âge, ils *devenir* énormes. Rien ne *plaire*, rien *n'agréer* de la part de quelqu'un qu'on *haïr*. Tu *être* pauvre si tes dépenses *excéder* tes revenus. La prudence *vouloir* que nous ne nous *confier* pas au premier venu. Il est honteux que vous ne *savoir* pas lire à votre âge; il est donc nécessaire que vous *étudier*. En *obliger* tes amis tu *t'obliger* toi-même. On se *rappeler* toujours avec amour son pays natal. Les hommes et les animaux *vivre*, les plantes *végéter*.

D. Reproduce in French the substance of an anecdote to be read by the examiner in English.

STORY TO BE READ ALOUD BY EXAMINER.

(Vide D.)

Two cats having stolen some cheese could not agree about dividing their piece. In order therefore to settle the dispute they consented to refer the matter to a monkey.

The proposed arbitrator very readily accepted the office, and, producing a balance, put a part into each scale.

Let me see, said he, ay! this lump outweighs the other, and immediately he bit off a considerable piece in order to reduce it, he observed, to an equilibrium.

The opposite scale was now become the heavier, which afforded our conscientious judge an additional reason for a second mouthful.

"Hold! hold!" said the two cats, who began to be alarmed for the event, "give us our respective shares, and we are satisfied."

"If you are satisfied," returned the monkey, "justice is not; a case of this intricate nature is by no means so soon determined."

Upon which he continued to nibble first at one piece and then the other till the poor cats, seeing their cheese gradually diminishing, entreated him to give himself no further trouble but deliver to them what remained.

"Not so fast, I beseech you, friends," replied the monkey. "We owe justice to ourselves as well as to you. What remains is due to me in right of my office."

Upon which he crammed the whole into his mouth and with great gravity dismissed the Court.

DODSLEY.

GEOMETRY.

TUESDAY, JUNE 13:—AFTERNOON 2 TO 4.

1. Enumerate the cases where Euclid proves the equality of two triangles and prove one of them.

2. Triangles on the same base and between the same parallels are equal in area.

Show how to convert any rectilineal figure into an equivalent triangle.

3. If a straight line be divided into two equal and also into two unequal parts, the square on half the line is equal to the rectangle contained by the unequal segments and the square on the line between the points of section.

Construct a rectangle equal to the difference of two given squares.

4. To describe a square equal to a given rectilineal figure.

5. Equal chords in a circle are equidistant from the centre.

If any number of equal chords be placed in a circle, their middle point will lie on another circle.

6. The sum of the opposite angles of a quadrilateral inscribed in a circle is two right angles.

7. The angle in a semi-circle is a right angle; the angle in a segment greater than a semi-circle is less than a right angle; the angle in a segment less than a semi-circle is greater than a right angle.

TRIGONOMETRY.

TUESDAY, JUNE 13TH :—AFTERNOON, 4 TO 5.30.

1. State and prove the relation connecting the radius of a circle, the length of an arc, and the radian (circular) measure of the angle which the arc subtends at the centre of the circle.

2. Write down the signs and numerical values of the following: cos 120°, sin 210°, tan 240°, cot 315°, sec 45°.

3. Express cos A, tan A, and sec A, in terms of sin A.

4. Prove (1) cos $(90° - A)$ = sin A, (2) sin $(-A)$ = $-$ sin A.

5. Prove that

(1) $\sin(A + B) = \sin A \cos B + \cos A \sin B$,

(2) $\cos 2A = 2\cos^2 A - 1 = 1 - 2\sin^2 A$.

6. Show that

(1) $\cos^2 A + \sin^2 A = 1$,

(2) $\cos^4 A + \sin^4 A = 1 - 2\cos^2 A \sin^2 A$,

(3) $\tan A + \cot^2 A = \sec^2 A \operatorname{cosec}^2 A - 2$,

(4) $\tan A + \tan B = \dfrac{\sin(A + B)}{\cos A \cos B}$,

(5) $\sin 75° = \dfrac{\sqrt{3} + 1}{2\sqrt{2}}$

(6) $\tan 15° = 2 - \sqrt{3}$.

I. LATIN GRAMMAR.

WEDNESDAY, JUNE 14TH :—9 TO 10.30 A.M

1. Decline senex, magnus civis, arcus, gener.

2. Compare magnus, antiquus, niger, magnificus.

3. Give the principal parts of tango, caedo, lego, negligo, adipiscor, meto, metior, ordior, audeo.

4. Give the fut. infin. of proficiscor, pres. inf. pass. of rego, fut. infin. pass. of lando, imperf. indic. of audio, fut. perf. of rego.

II. LATIN PROSE COMPOSITION.

(*a*) He came with his sister to Athens.

(*b*) He sent ambassadors to ask for peace.

(*c*) I was present when your brother died.

(*d*) He said that Guins would set out immediately.

(*e*) He asked me to remain at Rome.

III. TRANSLATION AT SIGHT.

Carthaginienses Regulum ducem, quem ceperant, petierunt, ut Romam proficisceretur, et pacem a Romanis impetraret, ac permutationem captivorum faceret. Ille Romam cum venisset, inductus in senatum, nihil quasi Romanus egit, dixitque, se ex illa die, qua in potestatem Afrorum venisset Romanum esse desiisse. Itaque et uxorem a complexu removit, et senatu suasit, ne pax cum Poenis fieret.

AUTHORS.

CAESAR, BELL. GALL., Bks. I AND II.
VIRGIL, AENEID, Book I.

WEDNESDAY, JUNE 14TH :—10.30 TO 12 A.M.

1½ Hour.

1. Translate :—

(*a*) Cognito Caesaris *adventu*, Ariovistus legatos ad eum mittit: 'Quod antea de conlequio *postulasset*, id per se fieri licere, quoniam propius accessisset, seque id sine periculo facere posse existimaret.' Non respuit condicionem Caesar, iamque eum ad sanitatem reverti arbitrabatur, cum id quod antea *petenti* denegasset ultro *polliceretur*; magnamque in spem veniebat, pro suis tantis populique Romani in eum beneficiis, cognitis suis postulatis, *fore* uti pertinacia desisteret.

CAESAR, Bk. I.

(*b*) Instructo exercitu magis ut loci natura deiectusque collis et necessitas temporis quam ut rei militaris ratio atque ordo postulabat, cum diversae legiones aliae alia in parte *hostibus* resisterent, saepibusque densissimis interiectis prospectus impediretur, neque certa subsidia conlocari neque *quid* in quaque parte opus esset provideri neque ab uno omnia imperia administrari poterant. Itaque in tanta rerum iniquitate fortunae quoque eventus varii sequebantur.

CAESAR, Bk. II.

(*c*) Dixit; et avertens rosea *cervice* refulsit,
Ambrosiaeque comae divinum vertice odorem
Spiravere: pedes vestis defluxit ad imos;
Et vera incessu patuit dea. Ille ubi matrem
Agnovit, tali fugientem est voce secutus:
"Quid natum toties crudelis tu quoque falsis
Ludis imaginibus? cur dextrae *iungere* dextram
Non datur, ac veras audire et reddere voces?"
Talibus incusat gressumque ad moenia tendit.

2. Explain the case of *adventu*, *petenti*, *hostibus*, *quid*, *cervice*, *talibus*; the mood and tense of *postulasset*, *polliceretur*, *fore*, *iungere*.

3. Write brief notes on: (*a*) The Roman legion. (*b*) pilum. (*c*) iudicium Paradis. (*d*) parce metu. (*e*) reliquias Danaum. (*f*) dives opum (*g*) lacrimis oculos suffusa nitentes. (*h*) Maia genitum. (*i*) Phoebi soror.

4. Scan the first two lines of (*c*).

CHEMISTRY.

WEDNESDAY, JUNE 14TH:—AFTERNOON, 2 TO 3.30.

Answer two questions from each group.

I.

1. What are the three kinds of chemical action? Give an example of each.

2. What do you understand by neutralization? Give illustrations.

3. What compounds does Carbon form with Oxygen? Describe the preparation and properties of one of them.

II.

1. What are the causes of the luminosity of flames?

2. How is Sulphur Dioxide prepared? What are its properties? What its uses?

3. Give the chemical names of any five of the compounds represented by the following formulæ:—$Na_2\ SO_4$, $Na_2\ B_4\ O_7$, $Cu\ (NO_3)_2$, ZnS, $H_3\ PO_4$, KOH, $KClO_3$.

III.

1. Make a tabular comparison of the properties of ordinary and red Phosphorus.

2. How would you obtain Bromine from Sodium Bromide? Write the equation. Give the principal properties of the Bromine.

3. Point out any relationships existing between the properties of elements and their atomic weights.

PHYSICS.

WEDNESDAY, JUNE 14TH :—AFTERNOON, 3.30 TO 5.

1. State the law of universal gravitation.

By how many grains would the weight of a pound (7,000 grains) decrease if carried to the top of a mountain 5 miles high, supposing the earth's radius to be 4,000 miles?

2. Explain the following terms:—force; viscous; annealing. How would you anneal (1) copper, (2) steel?

3. A piece of lead (sp. g. 11 35) weighs 50 grams in air. What will it weigh in water? How many cubic centimetres of water will it displace?

4. How does the time of vibration of a pendulum depend on its length? A pendulum 39 inches long beats seconds. How many beats would another pendulum, 13 inches long, gain on it in one hour?

5. State a general principle connecting the force and resistance in any machine.

By pulling with a force of 126 lbs. weight on the rope of a system of pulleys, connected by levers, wheels, etc., with a weight of 2,240 lbs. it is raised 3 feet. How many feet of rope must be pulled out? Neglect friction.

6. Describe an arrangement for producing distilled water.

7. What temperature Fahrenheit corresponds to 17.5 centigrade?

ENGLISH LITERATURE.

THURSDAY, JUNE 15TH :—MORNING, 9 TO 10.30.

1. State *briefly* what you know about
(*a*) The Canterbury Tales.
or (*b*) The Faerie Queene.

2. Sketch the rise of the English drama up to the time of Shakespeare; mention any four Elizabethan dramatists, and write a paragraph on any one of them.

3. Write *briefly* on the Periodical Essay, with reference to Addison and Steele.

4. Write a *short* criticism upon Wordsworth.

5. Give a brief character sketch of any one of the main personages in Richard II.

6. Under what circumstances were the following words spoken :

(*a*) I'll answer thee in any fair degree
Or chivalrous design of knighty trial.

(*b*) There is no virtue like necessity.

(*c*) If he serve God
We'll serve him too, and be his fellow so.

(*d*) Whilst he, from the one side to the other turning
Bareheaded, lower than his proud steed's neck
Bespake them thus :

7. Make notes on the following words : *fellow, inhabitable, lewd, caitiff, 'fantastic summer's heat,' securely, careful, fretted.*

8. Give a short outline of *the Lotos-Eaters*, and quote any lines from it showing some particular quality of Tennyson's poetry.

9. In what poem does each of the following lines occur ?

(*a*) Tho' much is taken much abides.

(*b*) Music that brings sweet sleep down from the blissful skies.

(*c*) Time driveth onward fast,
And in a little while our lips are dumb.

(*d*) His broad clear brow in sunlight glowed.

(*e*) The Gods themselves cannot recall their gifts.

(*f*) Bring the dress and put it on her
That she wore when she was wed.

BOTANY.

THURSDAY, JUNE 15TH :—MORNING, 10.30 TO 12.

(Write upon No. 9 and any five other numbers.)

1. Compare a wheat-grain and a bean seed, describing the germination of each.

2. Distinguish between the Gymnospermæ and the Angiospermæ, and describe a member of the former class.

3. Define the principal kinds of inflorescences, giving an example of each.

4. Describe those modifications of the calyx and the corolla which are due to cohesion and to adhesion.

5. Write a short account of the dispersal of fruits and of seeds.

6. State what you know of irritability and the movements of the living parts of plants.

7. Give an account of the assimilation of carbon by plants, and describe an experiment showing under what circumstances it takes place.

8. Describe the movements of water in the plant, noticing structural adaptations which control them.

9. Describe and classify the accompanying specimen.

Examiners will please supply each candidate with a common wild-flower. All parts of the plant must be present.

GERMAN.

JUNE 15TH :—AFTERNOON, 2 TO 3.30.

[N. B.—Candidates from Ontario schools may substitute No. 8 (*a*) and (*b*) for No. 1 (*a*) and (*b*.) Other candidates will omit No. 8.]

1 Translate into English :—

(*a*) Dem Böſewicht wird alles ſchwer,
Er thue, was er thu'.
Das Laſter treibt ihn hin und her
Und läßt ihm keine Ruh'.
Der ſchöne Frühling lacht ihm nicht,
Ihm lacht kein Ährenfeld ;
Er iſt auf Lug und Trug erpicht
Und wünſcht ſich nichts als Geld.

(*b*) Ihr ſchmerzlicher Verluſt, mein teurer Freund, deſſen ganze Größe wir recht wohl empfinden, da wir das liebe Kind vor zwei Jahren ſo hoffnungsvoll ſich entwickeln geſehen, hat uns beide auf's innigſte betrübt, und ich geſtehe gern, daß ich keinen Troſt dagegen weiß, als den die Zeit, die alle Wunden endlich heilt, herbeiführen wird. Jetzt kann ich nur mit Ihnen darüber klagen und Ihren ganzen Kummer mit Ihnen teilen.

2. Translation at sight.

Translate into English :—

Als der berühmte Benjamin Franklin noch ein Jüngling von 18 Jahren war, beſuchte er einſt den Prediger Cotton Mather in

Boston. Dieser nahm ihn sehr liebreich auf und führte ihn beim Weggehen einen kürzeren Weg aus seinem Hause. Die Nebenthüre aber war so niedrig, daß ein erwachsener Mensch sich bücken mußte, um nicht an den Querbalken zu stoßen. Franklin sprach während des Fortgehens mit seinem freundlichen Führer und sah daher nicht aufmerksam vor sich hin.—„Gebückt!" rief auf einmal der Prediger, aber in dem Augenblicke fühlte schon Franklin den Balken an der Stirn. „Merk' Er sich den kleinen Unfall!" sagte der Prediger. „Er ist jung und hat die Welt vor sich. Bück' Er sich auf dem Wege, und Er wird sich manchen harten Schlag ersparen."

3. Translate into German :—

(*a*) I bought Schiller's *William Tell* at a bookseller's in Hamilton. (*b*) What would you do with your money, if you were rich ? (*c*) My father always burnt the letters which were no longer useful. (*d*) A church is being built beside our neighbour's house. (*e*) Iron is heavy, lead is heavier, but gold is heaviest of all. (*f*) The eldest son of the Queen of England was born on the ninth of November. (*g*) A little beggar ran after a gentleman and asked him for some money. (*h*) Lazy boys learn only because they are obliged to learn. (*i*) You always leave out words when you are copying. (*j*) He was in need of money and is said to have done it on that account. (*k*) The messenger thought that he could not wait any longer because he was late.

4. Give the infinitive and the past participle of the following verbs : —*warf, trug, traf, hob, durfte, hiesz, nahm, log, lag, fand.*

5. *Die Läden.....jeden Abend geschlossen.* Insert the auxiliary in the foregoing, giving the reason for your choice.

6 Having regard to the meanings of substantives, state which classes are of the masculine gender.

7. Give a few examples of adverbial genitives.

For Ontario Students Only.

8. Translate into English :—

(*a*) Und der Mond ging auf, und beleuchtete den Fluß, die Wellen schlugen klingend ans Ufer und der Wald rauschte ; doch sie saßen immer noch und schwatzten. Da war es plötzlich, als

wenn eine kleine ganz schwarze Wolke vor den Mond träte, und auf einmal fiel etwas vor ihre Füße nieder, wie ein großes zusammengelegtes Tuch. Darauf stand der Mond wieder in vollem Glanze. Sie hoben das Tuch auf und breiteten es auseinander. Es, war aber sehr fein und viele hundert Male zusammengelegt, so daß sie viel Zeit brauchten. Als sie es vollständig auseinander gefaltet hatten, sah es aus wie eine große Landkarte. In der Mitte ging ein Fluß und zu beiden Seiten waren Städte, Wälder und Seen.

(*b*) Eines heißen Sommertages also, da kein Lüftchen sich regte, kam auch einmal ein armer Handwerksbursche die Straße dahergewandert, dem war es in der Fremde viele Jahre hindurch weh und übel gegangen. Als er vor dem Dorfe anlangte, drehte er zum Überfluß noch einmal alle seine Taschen um, doch sie waren sämmtlich leer. „Was fängst du an?" dachte er bei sich. „Todmüde bist du; und umsonst nimmt dich kein Wirt auf." Da erblickte er die herrliche Buche mit dem grünen Rasenhügel davor; und da sie wenige Schritte abseits vom Wege stand, legte er sich unter sie ins Gras, um etwas auszuruhen.

PHYSICAL GEOGRAPHY.

THURSDAY, JUNE 15TH :—AFTERNOON, 3.30 TO 5.

1. To what two motions is the earth subject? Explain two phenomena due to them.

2. Show clearly what causes the trade winds. What effect has the American continent upon them?

3. Draw a map of North America indicating roughly the relative height of its different parts above the sea level. Mark thereon the method of drainage of the St. Lawrence and Mississippi basins.

4. Describe the Gulf Stream and the Kuro Suiro. Give their courses and mention their effects.

5. Explain :—(*a*) the formation of clouds; (*b*) the cause of a rain storm; (*c*) the cause of a tornado.

6. Give the causes of earthquakes and volcanoes, and name some other causes contributing to the change of the physical surface of the earth.

7. Explain clearly the following :—intermittent springs ; glaciers ; the formation of a coral island.

8. How were coal beds formed? Where are some of the most noted found

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GREEK.

FRIDAY, JUNE 16TH :—MORNING, 9 TO 10.30.

XENOPHON, ANABASIS I.

1. Translate :—

ἀλλ' ἐγώ φημι ταῦτα μὲν φλυαρίας εἶναι· δοκεῖ δέ μοι ἄνδρας ἐλθόντας πρὸς Κῦρον οἵτινες ἐπιτήδειοι σὺν Κλεάρχῳ ἐρωτᾶν ἐκεῖνον τί βούλεται ἡμῖν χρῆσθαι· καὶ ἐὰν μὲν ἡ πρᾶξις ᾖ παραπλησία οἵαπερ καὶ πρόσθεν ἐχρῆτο τοῖς ξένοις, ἕπεσθαι καὶ ἡμᾶς καὶ μὴ κακίους εἶναι τῶν πρόσθεν τούτῳ συναναβάντων· ἐὰν δὲ μείζων ἡ πρᾶξις τῆς πρόσθεν φαίνηται καὶ ἐπιπονωτέρα καὶ ἐπικινδυνοτέρα, ἀξιοῦν ἢ πείσαντα ἡμᾶς ἄγειν ἢ πεισθέντα πρὸς φιλίαν ἀφιέναι· οὕτω γὰρ καὶ ἑπόμενοι ἂν φίλοι αὐτῷ καὶ πρόθυμοι ἑποίμεθα καὶ ἀπιόντες ἀσφαλῶς ἂν ἀπίοιμεν· ὅ, τι δ' ἂν πρὸς ταῦτα λέγῃ ἀναγγεῖλαι δεῦρο· ἡμᾶς δ' ἀκούσαντας πρὸς ταῦτα βουλεύεσθαι.

2. (*a*) Parse fully the words underlined above. (*b*) Explain the construction of οἵαπερ, τῆς πρόσθεν, ἀναγγεῖλαι.

3. Translate :—

ὡς δ' ἡ τροπὴ ἐγένετο, διασπείρονται καὶ οἱ Κύρου ἑξακόσιοι εἰς τὸ διώκειν ὁρμήσαντες, πλὴν πάνυ ὀλίγοι ἀμφ' αὐτὸν κατελείφθησαν, σχεδὸν οἱ ὁμοτράπεζοι καλούμενοι. σὺν τούτοις δὲ ὢν καθορᾷ βασιλέα καὶ τὸ ἀμφ' ἐκεῖνον στῖφος· καὶ εὐθὺς οὐκ ἠνέσχετο, ἀλλ' εἰπὼν Τὸν ἄνδρα

ὁρῶ, ἵετο ἐπ' αὐτὸν καὶ παίει κατὰ τὸ στέρνον καὶ τιτρώσκει διὰ τοῦ θώρακος, ὥς φησί Κτησίας ὁ ἰατρὸς καὶ ἰᾶσθαι αὐτὸς τὸ τραῦμα φησι.'

4. (*a*) Parse fully the words underlined above, giving principal parts. (*b*) Explain the construction of ἰᾶσθαι αὐτὸς. (*c*) Give the Latin equivalent for εἰς τὸ διώκειν.

5. Translate with grammatical explanation of words underlined:—

(*a*) Κῦρος γὰρ ἔπεμπε βίκους οἴνου ἡμιδεεῖς πολλάκις ὁπότε πάνυ ἡδὺν λάβοι, λέγων ὅτι οὔπω δὴ πολλοῦ χρόνου τούτου ἡδίονι οἴνῳ ἐπιτύχοι.

(*b*) θᾶττον ἢ ὡς τις ἂν ᾤετο, μετεώρους ἐξεκόμισαν τὰς ἁμάξας.

(*c*) ὥστε καὶ μεταπεμπομένου αὐτοῦ οὐκ ἐθέλω ἐλθεῖν, τὸ μὲν μέγιστον αἰσχυνόμενος, ὅτι σύνοιδα ἐμαυτῷ πάντα ἐψευσμένος αὐτόν, ἔπειτα δὲ καὶ δεδιὼς μὴ λαβών με δίκην ἐπιθῇ ὧν νομίζω ὑπ' ἐμοῦ ἠδικῆσθαι.

6. Give exact meaning and derivation of:—σωφροσύνη, φιλοθηρότατος, σπονδαί, σκηπτοῦχος, διαφερόντως, οἰκονόμος, σκευοφόρα.

7. Give a brief account of the battle of Cunaxa.

GREEK GRAMMAR AND COMPOSITION.

FRIDAY, JUNE 16TH:—MORNING, 10.30 TO 12.

I.

Translate into Greek:—

(*a*) Cyrus had a beautiful chariot.

(*b*) He gave many gifts to the queen herself.

(*c*) They will not be able to convince the people.

(*d*) You ought to order the hoplites to march to the mountains.

(*e*) The soldiers will not obey the same general.

(*f*) I led them against the enemy on the third day.

II.

Translate into English :—

ὁ στρατηγὸς οὖν συγκαλέσας τὸ στράτευμα ἔλεξε τάδε. ἄνδρες, ἐνθάδε μένειν οὐδαμῶς δυνάμεθα, ποῖ οὖν δεῖ ἰέναι ; οἱ γὰρ πολέμιοι κατὰ πᾶσαν τὴν χώραν ἐστρατοπεδευμένοι κωλύσουσιν ἡμᾶς διαβῆναι τὸν ποταμόν. εὐθὺς οὖν ἀπελθῶμεν ἐς τοὔμπαλιν, μετὰ δὲ χρόνον τινὰ πλείους ἱππέας συλλέξας (πολλοὺς γὰρ ἂν μισθώσαιμεν δέκα ἑκάστῳ μνᾶς δίδους) οὕτως τοὺς ἐναντίους νικήσομεν.

III.

(*a*) 2nd person sing. aor. indic. mid : perfect infin. active : acc. plur. fem. fut. participle active : 3rd plur. aor. opt. passive : 2nd sing. pres. Imperative Mid : 3rd sing. perfect Ind. Passive : 3rd sing pres. subjunct. active : of *βασιλεύω, γράφω, δουλόω, λαμβάνω, ἐλαύνω.*

(*b*) Acc. sig. and plur. and dat. plur. *γέρων, θυγάτηρ πούς οὗτος* (all genders) *εὐθύς* (all genders) *μέγας* (all genders) *ἡδίων.*

(*c*) Give meanings and constructions used with *διά, ἐπί, παρά, πρός.*

(*d*) (i) Give the rules for construction of (1) Final sentences. (2) Temporal sentences. (ii) Under what circumstances is the nominative used with the Infinitive in Oratio Obliqua.

PHYSIOLOGY AND HYGIENE.

JUNE 19TH:—9 TO 10.30 A.M.

(*Five questions only to be answered, including* 6 *or* 7.)

1. Enumerate the chief digestive juices, state where they are formed, and describe briefly their respective actions on the food.

2. Define the terms Arteries, Veins and Capillaries; and state how they differ with regard to distribution and structure.

How may arterial and venous hæmorrhage (bleeding) be distinguished?

3. Each respiration is made up of two phases: inspiration and expiration.

(*a*) Describe briefly the mechanism of these, and

(*b*) State how inspired and expired air differ.

4. Distinguish between:—

(*a*) Voluntary and involuntary muscles.

(*b*) Motor and sensory nerves, giving examples in each instance.

5. Describe carefully the parts of the eye which carry out the following functions:—

(*a*) Formation of images.

(*b*) Reception of visual impressions.

(*c*) Contraction and dilatation of pupil.

6. What are the principal functions of the skin, and wherein do the beneficial effects of systematic bathing chiefly lie?

7. State what you know regarding the advantages of exercise and its influence upon the circulation and respiration.

OPTIONAL ARITHMETIC.

MONDAY, JUNE 19TH:—MORNING, 10.30 TO 12.

1. Express $\cdot 0375$ as a vulgar fraction, proving your method.

2. The interest on a certain sum for the first year is $122.00, the compound interest for the second year is $128.10, find that for the third year.

3. What will it cost to cover with lead a tank whose depth is 3 ft. 6 in., whose length is 7 ft. 10 in., and whose breadth is 5 ft. 4 in., the lead costing 10s. 1½d. per square yard?

4. What must be the price of 5% stock in order to gain 8% on money invested?

5. The diameter of a 50 cent piece being $1\frac{3}{16}$ in., and the average thickness $\frac{1}{16}$ in., and 1000 such coins being melted down and formed into a cube; find an edge of the cube.

6. The height of a cone is 12 in., the diameter of the base 10 in.: calculate the surface and volume.

7. Express log 24 in terms of log 2 and log 3. With the aid of logarithms multiply 2616 by ·0325 and find the eighth root of 196.83.

GEOMETRICAL AND FREEHAND DRAWING.

MONDAY, JUNE 19TH:—2 TO 5 P. M.

PART I. (*Geometrical.*)

1. Draw a straight line which shall be a mean proportional between two lines measuring respectively 2.0 and 1.0 in.

2. Construct a triangle having sides of 1.0, 1.5 and 2.0 in. and an equilateral triangle which shall be equal in area to it.

3. Given the three sides, $AB = 1.2$; $BC = 1.5$; and $AC = 1$ in. ·8, draw three circles touching each other and having A, B and C as centres

4. Draw one-half of one loop of the cycloid generated by a point in the circumference of a circle of 2 in. diameter.

5. Draw three revolutions of a spiral of arcs of circles having radii increasing by equal increment of $\frac{1}{4}$ of an inch.

PART II. (*Freehand.*)

6. Sketch from memory any flower, preferably a Canadian wild flower.

7. Make a slightly enlarged copy of the Egyptian ornament before you.

8. Represent in outline a cube as it would appear above the level of the eye and directly in front of you, the upper and lower faces being horizontal.

9. Make a freehand drawing in outline of the model of a Norman Capital as it appears from your point of view.

PART III. (*Drawing.*)

10. Complete the drawing of the Capital, question 9, in shade and shadow.

11. Make a drawing in charcoal of one of the leaves of the Gothic frieze before you.

NOTE.—Marks will not be given in the problems of Part II. if instruments are used in the drawing.

The Capital (problem 9) is to be placed at a distance of four feet from the candidate, and resting on a surface one foot above the level of the eye. The vertical plane faces to the right of the candidate are to make angles of 60° with the line joining the eye to centre of the object.

OPTIONAL HISTORY.

TUESDAY, JUNE 20TH:—MORNING, 9 TO 10.30.

A.

1. Detail the relations between Philip and Alexander of Macedon, and the Greeks.

2. Comment briefly but precisely on each of the following subjects: the measures of Solon, the battle of Mycale, the position of Pericles at Athens, the Syracusan expedition, the rivalry of Sparta and Thebes.

B.

3. Describe clearly the successive steps by which Rome became mistress of the Italian peninsula.

4. Comment briefly but precisely on each of the following subjects: the reforms of Servius Tullius, the Decemvirs, the battle of Beneventum, the siege of Saguntum, the career of Pompey in the east.

C.

5. (*a*) Outline the main features of the Siege of Jerusalem, 70 A. D.

(*b*) How did the Swiss achieve their independence?

(*c*) Trace the main episodes of the Thirty Years' War from the landing of Gustavus Adolphus in Germany to the close.

6. Make brief but clear notes on: the Battle of Chalons, Mayors of the Palace, Rienzi, Wars of the Fronde, Revocation of the Edict of Nantes.

ENGLISH LANGUAGE.

TUESDAY, JUNE 20TH :—MORNING, 10.30 TO 12.30.

1. "Poetry, History and Legendary Lore are contained in words." Show how this is true and illustrate your answer.

2. (*a*) Write *briefly*, with illustration, on 'Elevation in Words.'

(*b*) National morality and customs may be found in words. Show this from the following: '*ennui*,' *honnêteté*, '*perfide*' '*idiot*.'

3. (*a*) What were the relative positions of Normans and Saxons after the conquest? Illustrate your answer from our present language.

(*b*) Make short notes on, '*pagan*,' '*heathen*,' *sacrament*, *magnet*, *bayonet*, *damask*.

4. (*a*) During what period did the following words arise: *Refugee*, *convertisseur*, *guillotine*, *rozzia*, *mob*, *to burke*.

(*b*) What is assimilation? Illustrate. What are synonyms? Distinguish *opposite and contrary*; *instruction and education*; *abdicate and desert*.

(*c*) Remark *briefly* on the following words:—*Crypt*, *formica*, *girl*, *smith*, *wrong*, *haft*.

5. Write a short paragraph on the relation of poetry to prose.

6. (*a*) Make a short note on the Indo-European or Aryan family of languages

(*b*) Give the plural or plurals of: *attorney-general*, *spoonful*, *penny*, *pea*, *index*, *genius*.

7. (*a*) Distinguish by means of examples:

The simple infinitive, the gerundial infinitive, the verbal noun, the gerund, the participle in '*ing*.'

(*b*) How is the meaning of a word modified by the following suffixes: *kin*, *en*, *ette*, *ing*, *ard*, *oon*, *ster*, *dom*, *age*?

8. Analyse: Long time in even scale

The battle hung; till Satan, who that day
Prodigious power had shown, and met in arms
No equal, ranging through the dire attack
Of fighting Seraphim confused, at length
Saw where the sword of Michael smote and felled
Squadrons at once.

9. What are the chief constituent elements of the English language? Briefly comment on each.

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